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The Preferred Theme Park

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Abstracts

Since early 1900s, theme park has gradually evolved into a major type of tourist attraction. For certain location, it is the main reason for visitations. Design and construction of such successful theme park requires outstanding creativity, and professional knowledge of logistics and operational requirements. These, however, can easily drive the development of new parks into product oriented rather than market oriented establishments. While it is difficult and premature to draw any conclusion on whether it is appropriate or preferred, there seems to be crucial to understand more about the desires, requirements and preferences of the guests. After all, it is the satisfaction level of the guest that determines their visit and re-visit propensity. It is also important to take note that once the park is built, alternations will be difficult and costly.

Another consideration given to the study is that while the existing literature on theme park is rather scant, knowledge about the oriental markets are even less available. On top of this, the market is undergoing a process of changes. One of which would be the aging of the population which indicated the necessity to approach an elder group of visitors and to satisfy the needs and wants of this adult non-family group.

For this conference, an exploratory study is used to identify the key attributes for a theme park to be successful and experience that is preferred. It would adopt a qualitative approach and employ in-depth interview as the major mode for data collection.

Keywords: Theme park design, Theme park attraction, Customer satisfaction

Introduction

Since early 1900s, theme park has gradually evolved to become one of the major types of tourist attractions. For certain location, theme parks have successfully developed as a destination by itself. It partially rectified the deficiency of attractions of many localities and provided critical reasons for visitation. Nowadays, theme parks become a new leisure spots and trends for entertainment all over the world, as discussed by Liu [8] and Milman [11]. It is more than a type of attraction but a travel motivation and a form of travel. Design and construction of theme parks requires a critical level of creativity and professional knowledge of logistics and operational requirements. These, however, can easily drive the development of new parks into product oriented rather than market oriented. It has been argued that the success of a theme park is to create escapist experience by cues, which support the theme, according to Pine and Gilmore [14]. The cues must be able to lead the visitors to escape from the reality and enjoy oneself in the fantasy that the park created, be it thrill or immersion into fairy tales. When designing a theme park, it is essential to understand what themes are well received and preferred by the potential visitors. The themes should be unique and different from competitions. Also, it is necessary to enhance the perceived values and decrease the perceived costs. For the perceived costs, it could be monetary or non-monetary. Time and energy consumption will be classified as non-monetary perceived costs, found by Cheng, Du and Ma [3]. Queuing time, weather and travel hazards, and crowdedness, therefore, affect the expectation of the guests and their level of satisfaction.

Although theme park is a big business with extremely high level of initial capital investment, literature on the expectation and behaviours of park patrons are relatively scant. Knowledge specifically related to Asian guests are even less. According to UNWTO, the tourism growth engine from now till 2030 will be Asia Pacific. Among which, the growing Mainland China market is perhaps the most important target markets for many establishments. For successful business strategies, therefore, it is necessary to understand their preference, motivations, decision criteria, expectations and behaviours such as those in related to information gathering, travel patterns and selection of destinations. These are the main objectives of the subject research. The study will be divided into major parts.

First, an exploratory study was executed to identify the key attributes for a theme park to be successful and an experience that will be preferred. It would adopt a qualitative approach and employ in-depth interview as the major mode for data collection. Target group include the more traditional family group who travel to and visit theme park with children aged 16 or below; young adults between 26 and 45 with no kids; and adolescence between 18 and 25. Target family respondents include parents of kids (6 to 9 years of age) and elder kids (10 to 16 years of age). More importantly, the study approaches adult groups between 18 to 45

years of age, of both gender and under different income group and education background. Prior theme park experience is a key attribute but not a screening factor. For the non-visitors, the key area of investigate is the barriers that prevent them from visiting.

Second part of the study is a quantitative investigation making use of structure questionnaire to measure their degree of preference on different dimensions. By differentiating the different groups of respondents, the researchers hope that a model would developed for the understanding of the needs and preference of different potential guests, predict their behaviours and to facilitate both the design of parks and their communication strategies.

Given the fact that the target is set at Chinese in Hong Kong and the Mainland, findings cannot be generalize to predict the behaviours of the non-Chinese. Yet, it will serve as a critical piece of the jigsaw puzzle to this untapped huge market. It also served to reveal the key parameters for the development of future parks and attractions.

For this conference paper, content will concentrate on the first part of the study and to solicit inputs, views and expert comments during the conference. The findings, conclusions and inputs will constitute an important part of the next phase of the study.

Literature review

Theme Park Product

According to Kotler [7], there are three product layers in the "theme park product". The core product, the most important product, is the excitement and/ or atmosphere of the theme park that creates for the visitors. The tangible product contains the safety, range of rides, attractions, shows, brand name, quality of service, sharing the park with other people. The last layer is the augmented product. It is encompasses other ancillary service including car park facilities, complaint handling, personalized service provision, dining and shopping. Birenboim, Anton-Clavé, Russo and Shoval [2] argued that park attractions are classified into five main types: rides, shows, restaurants, shops and games. They found that the most of the visitors go the the rides first when after entering the park. Shows are relatively less attractive than the rides. They tend to go back to their favorite rides again and go shopping before leaving the park. Accordingly to an industry key informant, however, theatre shows and spectacles are always rated as very important attributes for their satisfaction. The priority being given to rides, especially thrill rides or signature rides, is possibly due to the perceived crowdedness of such.

The visiting behaviours of the first-timers are different from the repeat visitors. The first-timers are more likely to enter the park earlier, which was discovered by McKercher,

Shoval, Ng, and Birenboim [10]. This, however, is believed to be related to what the industry would label as “maxing out” factor. Guests other than annual pass holders are tends to optimize their value of money by attending to as many rides and attractions as possible. The perception that queues will be shorter in the morning is yet another possible reason for entering the park earlier. For the repeaters, however, their choices of rides and attractions will be more selective. Their average length of stay can be shorter and thus they may not see the need to enter park as early.

The demand of the different activities changes along the time. The rides are more popular in the morning, while restaurants are busy in the late morning and early afternoon. Shops are usually getting crowded in the late afternoon and evening. It is also a question whether the design of the physical park can alter these patterns and to optimize the utilization of spaces.

Psychological Satisfaction

According to McClung [9], many visitors come to the park because of the desire of the children. The parents are willing to please the children by going to the theme park, as discussed at Johns and Gyimothy [5]; Johns and Gyimothy [6]; Bakir and Baxter [1]. They enjoyed watching the children having fun. For the children, the preference of different age group is different. For example, from the Pearce [13], the children aged 13-16 are interested in thrills than the others. Even though children’s desire is the main consideration, adults’ interest elements should not be ignored. It could make the park more fun by increasing the adults’ involvement. Some adults come to the park because of the nostalgia, referring to Johns and Gyimothy [5]; Johns and Gyimothy [6]; Bakir and Baxter [1]. While visiting the theme park, they could recall the good memory or experience from the past. For example, nostalgia and pilgrimage were major factors for adults since most of them had visited Legoland Billund as a child themselves, and it is also seen by some to be truly Danish and a must see attraction because of the history of Lego, from Bakir and Baxter [1]. To enhance the experience, some theme parks would show some history of the park, surrounding area or even the community.

Many visitors seldom re-visit the theme park very often because they are willing to try something new. Frequent visitors have high satisfaction to the park and purchase the annual pass. The annual pass allow them to re-visit anytime within a period of time. This group of visit are relative less intention to switch to another brand or theme park. From the Cheng, et al. [3], the variety-seeking of products by visitors means the visitors need different product categories or different brands of the same category to meet their different needs. Many visitors are variety-seeking and conscious the perceived value of the theme park. The visitors tend to stick with the brand of theme park that always have something new and exciting.

Environment and Facilities

McClung [9] pointed that the one of the most important factors influencing park attendance is climate. In the theme park, many thrill rides are in outdoor areas. The weather and climate are the key issues. Many thrill rides have to stop service in the rainy day and many people are squeezed in indoor area. On hot and sunny day, many parents are also reluctant to bring their children to the park because of the threat of sunstroke. In fact, the weather and climate are uncontrollable. To make the park safe and enjoyable to visit all year round, the designing and planning about the logistic and construction of the theme park are crucial.

Moutinho [12] found that apart from the theme park entertainment and pleasant environment, enjoyable facilities are the crucial factors of the visitors for selecting the park. Many visitors are the family group with kids. Spacious, equipped and sufficient nursery room as well as child care service is always welcome by the visitors.

Service Quality

In the theme park, apart from the environment and facilities, service quality is also a key element to make the visitors happy. Tsang, Lee, Wong and Chong [15] found that the attitude and performance of staff in the theme park were the key drivers in generating high satisfaction level. When the visitors have problems, they always expect the staff could be reached easily and responsive. The sense of human touch is predominant because the staff actively involves in the entire service delivery process in the theme park. The staff attitude and performance are influential to the image of the theme park, according to Haahti and Yavas [4].

Cost

Ticket price and consumption inside the park is concerned by the visitors. It may also be a barrier of the non-visitors. From the findings of McClung [3], cost is an important element to influence the park attendance. The household income of the non-visitors is relatively lower than the visitor. Cost is a factor for choosing the theme park. However, low cost or discount may not be a good tactic to increase the participant. Apart from pleasing the children, the parents also want to show off to others. They are willing to bring the children to the theme park and want to be seen by others. Referring to Bakir and Baxter [1], it is also a way to show the prestigious status by taking the children to the expensive place.

Perception of Non-visitors

McClung [3] underscored that age, children in household and income are the key factors for people not to come. He found that the park visitors tend to be younger, with children under 18 living at home, and earning more than non-visitors.

Apart from the constraint of lodging and crowded environment McClung [3]; Johns and Gyimothy [5]; Johns and Gyimothy [6] found that the park catered well for children's needs, but left adults with a feeling that they were "babysitting". It is also a reason from the non-visitors.

Re-visit Propensity

The success of a business is not only attracting the new visitors, but also retaining the visited guests. Cheng, et al. [3] identified that brand loyalty development could strengthen the visitor loyalty and increase the re-visit propensity. A corporate branding enables theme parks to create a good image, increase security, trust and recognition to attract visitors more efficiently. The theme park should formulate relevant promotion measures to align the image. Bakir and Baxter [1] reported that repeat visitation usually occurs when the visitors have both enjoyed the experience or when something new and exciting is offered, such as annual pass discount and special events.

Findings

According to the various groups of respondents, the major motivation for visiting theme parks include the followings. First and foremost, it is a good option to get thrill, excited and entertained. It is important to note that the three aforesaid motivations have critical difference. To get thrill as a motivation seems to appeal more to the younger adults and teens. Roller coasters, wet rides and other motion-based rides are the key types of attractions that they will queue up for. Their more matured counterparts and family group demonstrated a very different point of view. Although they also indicated positive value of thrill rides to a theme park, they have a high tendency to avoid participating. It is important to note that the environment rather than the ride can deliver the satisfaction of thrill to guests as well. This might be confused and correlated with another attribute, immersion.

It has been argued that bonding with family members and friends is another key attributes for park attendance. Especially among the local respondents, theme park attending is one of the good way to do some activities with their family, especially the kids. The availability of activities that the parents and do with their children, adults with their friends is important.

Majority of the family agreed that visiting which theme park is decided by the children and this is in line with the major body of the literature, for example, Johns and Gyimothy [5]; Johns and Gyimothy [6]; Bakir and Baxter [1]. Therefore, it could desirable to point towards children as the main target when designing the marketing strategies. When probing deeper into the respondents' decision process, however, there are a major observation that deserve

more attentions. First, those family with younger kids ages 3 to 6 are key sources of business to many theme parks. These younger kids' influence and participation to the purchase decision could be pseudo. It is very often that the parents are extending their influences and information to arouse the interest and preference of the kids. It is also worth attention that parents tend to make use of theme park holidays as incentive to motivate kids or rewards for their good works. According to a group of Mainland Chinese respondents, park attending can be regarded as a mode to 'showing off' to friends and relatives. Taking all these into consideration, the influence of parents and their part to play in the decision concerned should not be underestimated.

It has been revealed that most of the current theme parks rarely being designed and built for a balanced satisfaction of children and their parents. Although it has been argued that the main purpose for family visitation is to satisfy the children, parents somehow demonstrated their latent needs of being "entertained" as well.

Given the field work take place in Hong Kong and Guangdong province, weather is a more concern that respondents mentioned. The "open sky" outdoor approach of theme park became an obstacle to visitation. According to them, summer in Southern China is too hot, too humid to be outdoor. With the frequent thunder storm and typhoon hitting the territory, visitation will definitely be affected.

The availability of franchises is yet another important motives for visitation. Respondents in general agreed that likability of franchises (characters) is part of their consideration. For this reason, theme parks such as Disneyland and Universal studio are inherited with strengthen in both communication and satisfaction of visitation.

Animal and nature encounter is another perceived satisfaction of theme parks. Zoological park, however, are argued to be less preferred. The safari type would be a more desirable engagement. Yet, it is no longer an element that would create extra mileage to move the needle.

Brand building is very important in the theme park. According to the Cheng, et al. [3], the brand has become the main factor affecting visitors' selection of the theme parks in China. The well-known theme park brands are more attractive to the visitors than new creation. Partially, it is contributed by the quality assurance. It also has something to do with the perceived risk of visitation. According to the respondents, risk is associated with both "value of money" and "safety".

Travel distance to the park from home is not too much a concern to the group of respondents. They contended that they will normal include that as one of the element on their travel itinerary. As long as there is ample transit service avail, it is not too serious a concern. If the location of the park is far from the city area, they would consider to stay on premises for an overnight. Room rate will then be a concern. They also expressed their concern of lacking of night time activities and catering facilitates.

Regarding the augmented products of theme parks, respondents generally have an impression that prices are over-charged but quality of sub-standard. They can accept this as a common phenomenon but bearing an impact on their length of stay.

With regard to their purchase behaviours, various groups indicated a multiple channel model which included traditional travel agents, marquee and on-line portal. They do not have a strong attachment on any particular mode of distribution. Price and promotion are more important elements for draw their attention and influence their choices.

In terms of sources of information, respondents rely most on word-of-mouth and past experience. They also make reference to travel literatures both on-line and travel book. Among the younger respondents, there seems to be a tendency of heavier usage and reliance on social media reference. Travel blogs, guest generated messages and critics are given more attentions and are more influential.

Across different background, the propensity to share experience, tips and photos are gaining prominence. The younger respondents tend to do it online with no special group of audients. The more mature group tends to do it within their private network. Most of them asserted that they are more likely to share compliant than positive exclamations.

There are also other minor observations which have not been included in their paper. Some of the observations such as those related to the “stamp collecting” behaviours and component of merchandises in overall satisfaction seem to be interesting and important. The existing batch of result, however, has been able to provide sufficient breadth and depth to reveal the situation. The researchers, therefore, decided to investigate further before moving onto the second phase of the study. This phase of the study only served as the starting point of a full fletch study and the existing findings will be used as input to the conceptual design and methodological setting for the subsequent quantitative study. In the upcoming phase, a questionnaire survey will be designed and conducted in Hong Kong, Guangdong and selected non-Guangdong region.

Given the fact that the target is set at Chinese in Hong Kong and the Mainland, findings cannot be generalize to predict the behaviours of the non-Chinese. Owing to the limitation of budget and time, the geographic definition for data collecting in China is delimited to tier 1 cities in southern China, viz., Guangzhou and Shenzhen. Yet, findings of the study shall serve as a critical piece of the jigsaw puzzle to this untapped huge market. It also served to reveal the key parameters for the development of future parks and attractions.



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Shaping Thai Hot Springs to Serve Japanese's Predilections

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Abstract

It is widely known that Japanese people love to go to hot springs for recreation and health. It could be said that hot springs is a part of Japanese culture. Currently, there are significant number of Japanese, especially the elderly, migrate to other countries due to various reasons. Thailand is one of the top destinations for Japanese migrants due to its lower cost of living and good living environment. The hot springs related- business in Thailand viewed it as an opportunity to attract Japanese migrants to become their customers. However, the Thai and Japanese hot springs styles are different; therefore, this research aims to study how to shape Thai hot springs to serve Japanese's predilections. The researcher based her study on the concept of tourism supply components. The main research methodology was focus group and participant observation. The results were classified into 4 components including natural resources and environment, built environment, operating sectors, and spirit of hospitality and cultural resources.

Keywords: Thai Hot Springs, Japanese, Predilection

INTRODUCTION

The Tourism Authority of Thailand (TAT) is aiming to attract Japanese to come to Chiang Mai for a long-stay. The main reasons are to boost income of tourism sector in Thailand as well as to raise awareness of tourism-related entrepreneurs in Japan on the capability of Thailand to be an attractive long-stay destination of Japanese [1].

According to the survey by Long-stay Foundation Japan in 2013, Thailand was on the second rank of long-stay destinations that Japanese would like to live in. In 2013, there were an extraordinary amount of inbound Japanese tourists at approximately 1,500,000 visited Thailand, which was about 11.96 percent higher than in 2012 [2].

Besides a significant number of them, Japanese are considered as a high quality tourist group in Thailand due to their higher spending than tourists from other countries. Statistics show that Japanese tourists spent approximately of 4,500 Baht per day and usually stay for 7.6 days per

trip [3]. Considering the Japanese residents in Thailand, this group of resident pays around 300,000 Baht per person per year for accommodation and about 30,000 Baht a month or 360,000 Baht a year for other costs such as food and home supplies. This provides revenue of more than 1 billion baht to the country each year. It was noted that this group of Japanese tends to spend their money on tourism as well [4].

As Japanese are the target group of tourism in Chiang Mai, it is necessary to find tourism-related products and services to serve their interests. It is generally known that Japanese are found of visiting hot springs. As Japan is a volcanically active country, it has thousands of hot springs around the country. There were over 90 medical facilities in the mineral spring locations in Japan. From the Japanese' traditional belief, hot springs are social spaces as well as sites of purification and ritual [5]. This fact raised the opportunity issue to promote hot springs in Thailand to the Japanese since it could match their predilections.

The researcher selects San Kamphaeng Hot Springs in Chiang Mai Province as a study site of this research since it has been reputed as one of the top tourism destinations in Thailand for a long time. The Tourism Authority of Thailand (TAT) together with San Kamphaeng Village Agricultural Cooperative under the monitoring of the Royal Development Project had developed this place to become tourism destination and formally opened it to the public in 1974 [6]. According to the manager of San Kamphaeng Hot Springs, Littima Kanjaima, the majority of the visitors (about 80 percent) are Thais and the hot springs still have ample capacity to handle more visitors. She expressed that if the Hot Springs get more visitors (preferably Japanese), it will generate more income which would surely have positive economic effects to the surrounded communities as well as more employment opportunities for the locals [7].

Due to the aforementioned rationale, the researcher conducted this research in order to study how to shape Thai hot springs to serve Japanese's predilections. The researcher chose to use San Kamphaeng Hot Springs as a case study. The result of this research will not only benefit San Kamphaeng Hot Springs but also other hot springs destinations in Thailand.

THEORETICAL PERSPECTIVE

There are various theoretical perspectives that have been applied to study tourism related businesses. In this study, the researcher mainly used Tourism Supply Components Concept to structure her study. Tourism supply components are classified into four broad categories including [8].

1. Natural resources and environment – This category constitutes the fundamental measure of supply. Basic elements in this category include air, climate, physiography of the region,

landforms, terrain, flora, fauna, bodies of water, natural beauty, and water supply for drinking, sanitation, and similar uses.

2. **Built environment** – This includes infrastructure and superstructure such as water supply systems, sewage disposal systems, gas line, electrical lines, drainage system, roads, communication networks and commercial facilities.

3. **Operating sectors** – This represents transportation, accommodation, food services, and other tourism services.

4. **Spirit of hospitality and cultural resources** – This includes culture, language, customs, and other hospitality components such as fine arts, literature, history, music, dramatic art, dancing, shopping, sports, and other activities.

RESEARCH METHODOLOGY

Research scope

This research studied what tourism resources, facilities, and activities were currently being offered by San Kamphaeng Hot Springs. Then, the researcher designed an actual tourism program of 2 days – 1 night for the Japanese informants to participate in so that they could provide feedbacks and suggestions from their direct experiences. The aforementioned program was designed based on Tourism Supply Components Concept [8]. The collected data was summarized and analyzed to answer the main research question “What are the Japanese’s suggestions to shape current Thai hot springs to serve their predilection?”

Population and sample group

Population

The population of this research was the group of Japanese residents in Chiang Mai Province, Thailand of approximately 3,300 people (Data as of January, 2013) [9].

Sample group

The researcher applied purposive sampling technique to choose informants for this research. The criterion were that those sample must be Japanese, able to speak English, live in Chiang Mai Province, willing to provide opinions and related data, willing to participate in the research’s mock up trip and able to participate in the focus group meeting. There were 3 sessions of focus group. Each session consisted of 8-11 informants. The purpose to conduct 3 sessions of focus group was to collect and compare data from different groups. In addition, the researcher intended to make the group small enough so that every informant would have opportunity to voice their opinions.

Data collection method

Primary data

At first, the researcher collected data of what tourism resources, facilities, and activities were currently being offered by San Kamphaeng Hot Springs in a holistic picture as well as concepts and theories about tourism. Then, the researcher designed a San Kamphaeng 2-days, 1-night tourism program in order to conduct experimental tourism process by letting the informants experienced tourism products and services provided hands-on as if they were the actual tourists. It was designed that the informants stayed overnight at the accommodations located in the Hot Springs area.

The researcher applied focus group technique as a main research tool to collect data. To facilitate the focus group discussions, the researcher developed a focus-group questions list in a form of Powerpoint slide set which was translated into Japanese.

During the focus group session, the researcher acted as a moderator who facilitated the discussion among the selected informants. Even though the researcher selected only the informants who could communicate in English, the researcher had invited a Japanese professional translator to assist in case there were language-barriers occur. During the focus group session, the researcher also recorded the discussion contents in her notebook. As soon as the focus group assistant sent the verified data to her, she re-checked with her notes for data validation and then used that information as results of the research.

Secondary data

The researcher collected secondary data by reviewing related documents about tourism concepts and practices and information related to San Kamphaeng Hot Springs.

Data analysis method

The researchers analyzed the data using coding technique along with recursive abstraction technique. When coding was completed, the researcher prepared reports via a mix of summarizing the prevalence of codes, discussing similarities and differences in related codes across distinct original sources/contexts, or comparing the relationship between one or more codes.

Regarding recursive abstraction technique, the researcher analyzed some qualitative datasets without coding as appropriate. The implementation was that the datasets will be summarized; those summaries were then further summarized and so on. The end result was a more compact summary that would had been difficult to accurately discern without the preceding steps of distillation. This method was appropriate in this research where there were three focus group meetings and the researcher had to collect data from each meeting and integrate the results from all of the meetings.

RESEARCH FINDINGS

This article presents research findings in 3 parts as follows:

Part 1: General information of informants

Part 2: Japanese's suggestions to shape current Thai hot springs to serve their predilection

Part 1 General information of informants

Three focus group sessions was conducted. There were a total of 29 the informants participating in the focus group session 1-3 altogether. The majority of were male, age 60 years old or above, and married. Most of their income range from 20,000 – 100,000 Baht per month while their expenses range from 20,000 – 100,000 Baht per month. The top reason of their staying in Chiang Mai as long stayers was to stay in a lower cost of living country after their retirements. The majority of them have been staying in Thailand for 1-5 years. Their top 3 personal interests include travelling, sports, and music. Their travelling budget per month ranged from 10,000 – 50,000 Bhat per month. They preferred to travel with friends and family.

Part 2: Japanese's suggestions to shape current Thai hot springs to serve their predilections

This part classified Japanese's suggestions into 4 categories based on Tourism Supply Concept as follows.

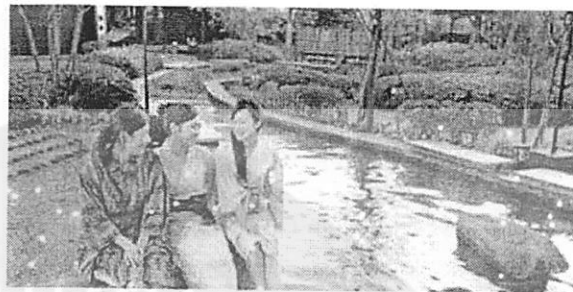
1. Natural resources and environment

Suggestion: Nature-harmonious design

The Japanese informants indicated that the at San Kamphaeng Hot Springs as well as other hot springs around Thailand are located in the natural setting which suite the Japanese's taste. However, the current design of the facilities was made of concrete and steels which contrast to the natural surroundings. Therefore, they strongly suggested that the design of the entire hot springs place should be harmonious to nature. The informants explained that the Japanese in general were sensitive of the design and they very much prefer that the facilities and designs of hot springs should be nature-harmonious. For instance, they indicated that the seats along the hot springs foot stream at San Kamphaeng Hot Springs were made of concrete in which made the place felt too rigid. They suggested replacing concrete material with woods and natural rocks to add the natural feels to the place.



San Kamphaeng
Thailand



Japanese style
(Source: <http://www.oedoonsen.jp/en/top/>)

Picture 1: Thai concrete seats and Japanese- recommended natural style

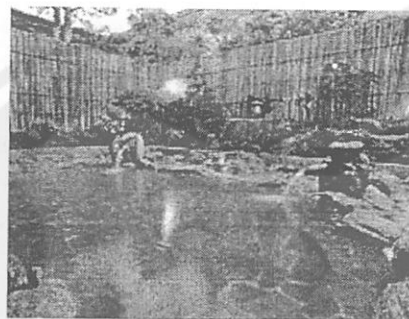
1. Built environment

Suggestion: Rotenburo style bath house

The top suggestion to reshape the current Thai hot springs to serve the Japanese's predilections was to change the Thai walled-bath house to be an outdoor (Rotenburo) style. Currently, the bath houses provided at San Kamphaeng as well as many other hot springs around Thailand were too closed with walls and roof in which Japanese did not like. Some informants described their feeling when using the bathhouse facilities as "Taking a bath in jail." In the focus group discussion, they agreed that the Japanese in general preferred open-air hot springs bath or so called "Rotenburo" so that they could sit in the hot tub and enjoy the natural surroundings simultaneously. The "open-air" feature could be designed in various ways such as open roof or have windows that the users could see the scenery outside while they still have their privacy and safety.



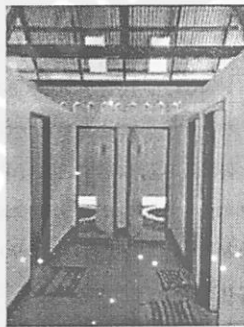
San Kamphaeng
Thailand



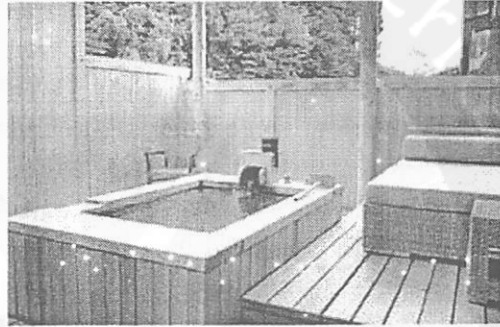
Japanese style
(Source: www.aguide2japan.com)

Picture 2: Thai style walled-bath house and Japanese Rotenburo
Suggestion: Relaxing space in bath house

When Japanese use hot tub, they would use it several times which means they would enter the hot tub, sit and relax for a while, then come up to sit and relax, then repeat the cycle until they felt completely comfortable. They mentioned that at the San Kamphaeng Hot Springs facility, there was no proper space to sit and relax. Therefore, they could use the hot tub for only one time and then had to go out of the building because there was no space to sit and the circulation in the building was not good. In addition, there were no clothes for them to wear while taking a break between each hot tub usage. They strongly suggested that San Kamphaeng Hot Springs should re-design its hot bath building to provide a space and facilities for customers to rest during their onsen time. The facilities could be as simple as chairs and tables up to more complexes such as fruit juice bar equipped with sofa sets.



San Kamphaeng
Thailand

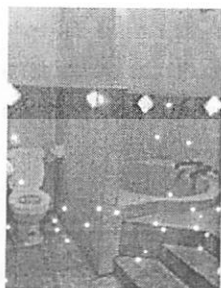


Japanese style
(Source: <http://www.gorahanaougi.com/en/souunkaku/>)

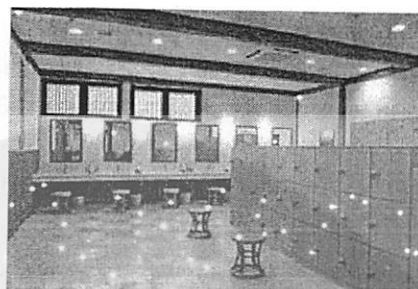
Picture 3: Thai bath house with no relaxing space and Japanese bath house with spacious relaxing space

Suggestion: Dry space to change clothes

Regarding Japanese onsen style, there must be a dry space to change and store their clothes before entering the bath area. Currently, the provided facilities did not have such feature. The informants highly suggested that this issue is very important for the Japanese customers.



San Kamphaeng
Thailand



Japanese style

(Source: <http://mtfuji-jp.com/special-guides/fujiyamaonsen/>)

Picture 4: Dry space for changing clothes
Suggestion: Pre-onsen body cleansing facility

There was a different onsen custom between Thai and Japanese style. The informants pointed out that Thai people use hot tub as they clean themselves while Japanese use hot tub or onsen as their relaxation facility. At present, there was no bathing facility to clean their bodies before entering the hot tub. So, they suggested adding body-cleansing facility to the place. The body-cleaning space could be as simple as a shower room equipped with soap and shampoo for the customers to use.



San Kamphaeng
Thailand



Japanese style

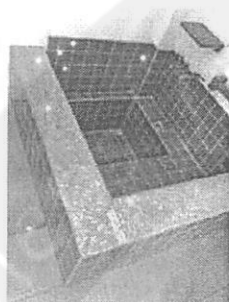
(Source: www.miejets.org)

Picture 5: Thai bath house with pre-onsen body cleansing facility and Japanese bath house with spacious relaxing space

Suggestion: Hot tub filled with water at all time

The informants mentioned another big different between onsen in Japan and at San Kamphaeng Hot Springs that the hot tub (or pool) in Japan always filled with hot and temperature controlled water and the water was circulated regularly, therefore the water was clean all the time. While at San Kamphaeng Hot Springs, the customers have to mix hot and cold mineral water and fill the hot tub by themselves, and they had to drain the hot tub after

every usage. The Japanese found that this was not convenient to them, and they highly suggested to have the hot tub filled with hot spring water at all time. In addition, there should be water circulation system to keep the water clean. They added that to do it Japanese way would help save the spring water resources so that they would have mineral water to use in the long run.



San Kamphaeng
Thailand



Japanese style
(Source: www.miejets.org)

Picture 6: Thai empty bath tub and Japanese bath tub filled with water at all time

1. Operating sectors

Suggestion: Link with Japanese networks

It was found from the focus group discussions that many Japanese did not know about San Kamphaeng Hot Springs or ever heard about it but never visit. The main reason was that the hot springs promoted its tourism mainly to the Thai people but it did not reach out to the foreigners. The Japanese suggested that most effective channel to reach the Japanese residents was through Japanese network such as Japanese long stay association and through Japanese media such as free Japanese press distributed in Chiang Mai. In addition, the hot springs officer should develop its website in Japanese as well as English so that the Japanese could search for the place by themselves.

In addition, they suggested that many Japanese preferred to receive information in Japanese (or at least in English), therefore, necessary things such as ticket, signs provided around the hot springs area, maps, brochure, and so on should be written in Japanese.

2. Spirit of hospitality and cultural resources

Suggestion: Highlight on Lanna culture

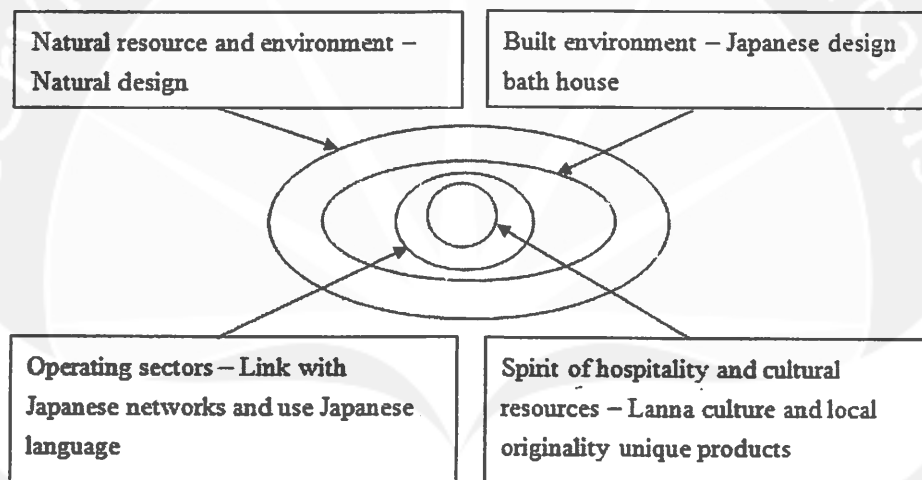
Japanese are fond of Lanna or northern Thai culture. They perceived it as a charm of Chiang Mai. Therefore, they suggested adding the feature of Lanna culture into the hot springs facility designs and its staff services. For example, the Thai staff should greet the visitors by

“Wai” (Thai gesture for greeting). The Japanese highly expected the staff’s politeness and hospitality manner.

Another significant point was that the informants indicated that they were not impressed with the product and souvenirs current sold at the hot springs shops. They said that those products did not well present its originality. They suggested that there should be unique products of San Kamphaeng Hot Springs that visitors could not buy from somewhere else and such products should be of high quality. For example, there should be products made of San Kamphaeng spring water, local organic coffee, fruits, and vegetables, ice cream made of milk from local farms, to name just a few.

CONCLUSION

From the result of this study, it could be concluded as in the picture below.



Picture 7: Summary of how to shape Thai hot springs to serve Japanese’s predilections

From the results of the study, it could be concluded that the Japanese, even though living outside Japan, their preference of hot spring leans toward Japanese style. If the Thai hot springs want to attract Japanese customers, they should consider shaping the components to serve their taste. It was obvious that the Thai-designed facilities at the hot springs were different from Japanese-design and it was noted that the Japanese were likely to deny using the Thai-design. To enjoy hot springs, the Japanese want to be in their cultural comfort zone. Unconsciously or otherwise, Japanese's experiences when travelling tend to be heavily influenced by what they are passionate about. The destinations should not underestimate the importance the customers’ preference if they would like to attract them as target customers. Understanding travel behavior and motives has marketing and managerial aspects. Through

understanding those two aspects, tourism product design and development can be more effectively linked to certain market segments and needs.

Acknowledgments

I would like to thank the manager and staff of San Kamphaeng Hot Springs for providing me opportunity to conduct this research on site and to provide me valuable information. I deeply appreciate all the Japanese informants for their efforts and times to participate in the research activities. I would like to thank my research assistants for assisting me through the work process. Lastly, I would like to thank the Faculty of Business Administration at Chiang Mai University for the funding support.

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ISBSS-4405

**Household Accounting of Bank for Agriculture and Agricultural
Co-Operatives'(BAAC) Customers in Sansai District, Chaing Mai,
Thailand**

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ABSTRACT

This study under the topic of "Household Accounting of Bank for Agriculture and Agricultural Co-operatives'(BAAC) Customers in Sansai District, Chaing Mai, Thailand" aims to 1) explore the household accounting practice of BAAC's customer 2) to study customer's attitude toward accounting practice and 3) to explore problems for conducting such accounting practice. The results found that the majority of respondents are male between 51-60 years old with average income of 50,001-100,000 Baht (USD 1 equals to 30 Baht) who has personal loans with BAAC. Respondents has their own source of information in following accounting procedure from BAAC. Respondents show little experiences in following accounting practice and normally work on the accounting during the night time at home. They search for accounting knowledge from BAAC and the frequency of conducting accounting is 3 times per week. Respondents are also recommended on accounting procedure from BAAC and normally apply their accounting knowledge to their own matters.

With regards to attitude toward conducting accounting procedure, respondents feel that they should follow accounting principles but because of its difficulty they tend to defer doing such accounting. The second highest score is in being able to follow self-sufficiency principle and believe that it has made their lives better as it helps family for financial plan- increasing the income and decreasing the expenditure.

This has made agricultures more prudent in spending and let them know the details of expense each month which finally increases the amount of savings. Training provided by BAAC helps them to follow accounting principle. In addition, they believe that following suggestions from BAAC's staff allows them to act more efficiently and to decrease their level of debts.

Problems in following accounting procedure are lack of knowledge and experience in accounting, too much responsibility so that they do not have enough time to do the accounting, lack of accounting knowledge from both private and public agency. The least degree problem seems to be place in conducting accounting procedure.

Recommendations are 1) to have more time with BAAC's staff for suggestions on the regular basis
2) to get regular training program3) to get support from BAAC regularly.



ISBSS-4573
**The Study of Users' Facial Emotion toward Commercial Website
Appearance**

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Abstract

Many online systems lack the ability of understanding and responding to users' emotions. Commercial website appearance which is suitable to users' emotion could attract and motivate users to purchase. In order to measure peoples' emotion responses, physical and psychological methods are often used in Kansei studies. Facial expression, one of essential physical emotion response, directly reveals people's perceptive feel. The aim of the study is mainly to explore the relationship between users' facial emotion and commercial websites. In addition, the correlation between physical perception and cognitional respond is analyzed and discussed. The research method firstly is to explore website design factors by group discussion and investigation. Second, the experiment was executed to collect the participants' emotion data including facial expression and psychological self-report emotion responds to commercial websites. ANOVA and Quantification Theory Type I were applied to statistically analyze the data. The results yield that some website design factors - situated color and graphic banner size- have significant effects on users' psychological emotion and facial expression. The developed computing model provides an approach to predict the adapted design to users' emotion.

Keywords: Facial emotion, emotion, Kansei engineering, commercial website appearance

1 Introduction

1.1 Background

The prevalence rate of net-surfing has reached as high as 48% in view of the network utilization status for the last decade in Taiwan. Network technology has become the mainstream of information transmission. Website has been used as one of tools to communicate information to audiences (Kent & Taylor, 1998). Scholar Powell (2002) states website appearance initially impress visitors before they begin to understand website content. Therefore, it is essential to realize how website design appeal and affect users. However, the past studies about website design mostly focus on usability and functionality. Norman (2003) proposed emotional design theory which claims it is crucial that users' emotion responses to

artifacts. In recent years, users' emotion has been deemed as one of important design issues. For example, since on-line purchase is getting popular, people's emotion respond is usually to affect their purchase decision. Thus, to measure customers' emotion responds to on-line store appearance will be profitable to websites design.

Emotion can be conducted one expressed in various ways, including subjective feelings, physiological activity, drive performance, cognitive evaluation, and behavioral tendency (Scherer, 1984). There are various measurement tools developed to measure emotional responses, including physiological, physical and psychological approach. Physiological measures are like s brain wave, heart rate, skin conductance activity, EMG. Physical measures comprise pupillary response, facial expressions, and etc. Psychological measures usually adopt self-report questionnaire or interview methods to learn users' emotion perception (Mahlke & Minge, 2006).

Facial expressions which reveal ones' emotion responds toward stimuli, directly and initially. Facial expressions also present kind of ones' psychological appraisal in some way. The aim of the study is to explore ones' facial emotion respond and self-report appraisal toward commercial website design. Figure 1 shows the research framework and the research purposes are stated as follows:

1. To explore the correlation between psychological and facial emotion responses.
2. To explore the effect of commercial website design factors to one's facial emotion.
3. To explore the effect of commercial website design factors to psychological appraisal.
4. The relationship between commercial website design factors and emotion.

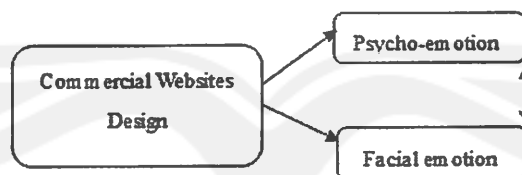


Figure 1 、 Research Framework

2 Literature Review

2.1 Commercial Websites Design

Appearance design affect its affective usability when one browser website. It will usually affect users' purchase decision and brand identification that people's initial impression and emotional responds toward online website visual interfaces. Commercial websites design

factors usually comprises brand logo, standard color, text, image, mascot graphic or some multimedia to represent brands identity. These visual elements all communicate brand spirit to online audience. The essential website design factors are described as following:

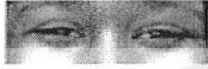

Picture: Website pictures are applied to strengthen the message broadcast. The main image size usually affects users' attention, interest and preferences. Other images could also be used to direct users' to read content.

Color: Color could trigger psychological and physiological reaction. They also come up with various substantive association or abstract emotion to users. Website color could express commercial brand personality. The primary color on websites could strongly enhance identification and impression.

2.2 Facial Expression and Emotion

Emotion is one's psychophysical responses to external stimuli. Individuals express their emotion experience to communication with others (Izard, 1997). However, 55 % of face-to-face human communication is relied on facial expressions, indicating that facial expressions play an important role to reveal ones' affective cues (Mehrabian & James,, 1974). Facial expressions are one of the most widely acknowledged forms of sentic modulation. Darwin researched and stated creatures have the coherent facial expression to communicate six primary emotions: fear, anger, sadness, happiness, disgust, and surprise. Based on Darwin's researches, Ekman (1994) developed a "Facial Action Coding System (FACS) to identify the six primary emotions. Furthermore, Ekman, Friesen, and Joseph C. Hager published a significant updated version to Facial Action Coding System (FACS) in 2002. According to FACS, one's face are classified to several parts including upper face, lower face, eyes, eyebrows, nose , chess, etc. The action units (AUs) of one's facial muscular movement are defined and encoded from slight different instant changes in each part. There are totally 44 action units: 12 AUs are on upper face, 18 AUs are on lower face, and others are some combined action unit sets of head or other parts. The corresponding sets of action units are defined and identified to six primary emotions. For example, Table 1 states happy is AU6+AU12. FACS has become a common standard to systematically categorize the physical expression.

Table 1 “Happy” emotion identification based on FACS

		Happy
AU6	AU12	

Soleymani, Pantic, & Pun (2012) researched the relationship between primary emotion and dimensional emotion. They proposed the values of the basic emotions on valence and arousal dimension as Table 2. Accordingly, one’s facial emotion recognized by FACS could be quantified to the values of two-dimensional emotion.

Table 2. The valence and arousal values of primary emotion (Shu, 2007)

Emotion	Surprise	Sad	Angry	Fear	Disgust	Happy	Neutral
Valence	3.88	3.49	3.1	3.4	2.82	6.96	5.11
Arousal	5.51	5.29	5.66	5.29	5.22	5.79	3.67

2.3 Psycho-emotion appraisal

Self-Assessment Manikin (SAM) is one of self-report psycho-emotion appraisal measurement. Lang (1980; Hodes, Cook, & Lang, 1985) devised a picture-oriented instrument called the Self-Assessment Manikin (SAM) to directly assess the pleasure, arousal, and dominance associated in response to an object or event. Figure 2 depicts the SAM measurement illustrating its nonverbal, graphic depiction of various points along each of the three major affective dimensions. SAM ranges from a smiling, happy figure to a frowning, unhappy figure when representing the pleasure dimension, and ranges from an excited, wide-eyed figure to a relaxed, sleepy figure for the arousal dimension. The dominance dimension represents changes in control with changes in the size of SAM: a large figure indicates maximum control in the situation.

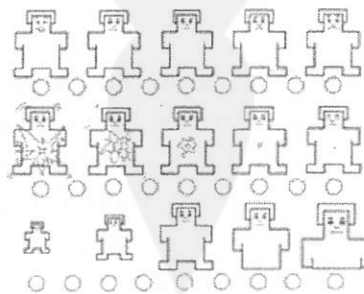


Figure 2. SAM Measurement (Lang, 1980)

3 Methodology

The study aims to analyze the emotion of browsing website. It was divided into 3 phases (3 phases is as shown in Figure 3). First of all, we analyzed the related reference of web design by Focus Group, and reduced the web design factors to three main factors: color, title font size and banner size. After Focus Groups, we made the website samples as stimulus by coding the main factors. Secondly, we collected the data by measuring the physical signals, user observation and questionnaire. Finally, we analyzed the data by statistic software SPSS, and discussed the emotion of browsing the website by quantitative analysis.

15 volunteer participants (12 males and 3 females) were recruited in the study. Their average age is 23 and all much experienced in browsing websites. All subjects volunteered for this study and understood the experimental procedures.

The average time of experiment is about 5 minutes per one subject. First of all, explaining the procedures. Secondly, asking the subjects for gazing the screen, and presenting each website sample for 3 seconds. There were a white screen in three seconds after each website sample, and nine website designs transmitted in random and recorded the system time when the web appeared.

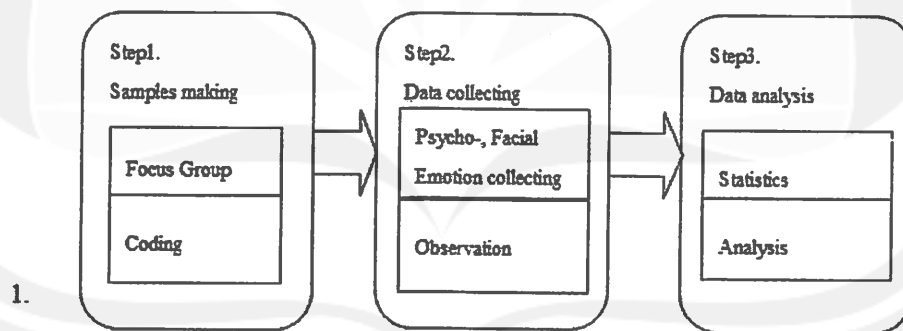


Figure3. The phases of Study










3.1 Samples

We made the samples design by Focus Group. The stimulus of experiment was taken the apparel commercial brand websites for example. After concluding the main design factors of commercial brand website, the main web design factors include: layout design, text, picture, color, and operationally. We coded the web design factors by Focus Group, and there were five web designers in group. We compared with 12 apparel commercial brand websites in Taiwan, and concluded three main web design factors related with emotion are color tone and banner size. In accordance qualitative coding results, we defined color tone as warm, neutral

and cold. The height of banner graphic size is classified as large (600 pixels), medium (400 pixels) and small (200 pixels).

The orthogonal experimental design is executed and got the nine sample combinations. The fashion websites are taken as the samples because users easily have affective responses to commercial websites. The samples as Table3 were shown in random sequence to participants during the experimental procedure.

Table 3 Website Samples

		
No.1/ Warm/ Large	No.2/ Cold/ Small	No.3/ Warm/ Midium
		
No.4/ Neutral/ Medium	No.5/ Warm/ Small	No.6/ Cold/ Large
		
No.7/ Neutral/ Small	No.8/ Cold/ Midium	No.9/ Neutral/ Large

3.2 Data collection and analysis

In this study, the psycho- emotion and facial emotion are measures. The facial and psycho-emotion could be measured in the dimension of arousal and valance (Shu, 2007; Lang, 1980). Participants' facial image is recorded by HD webcam and captured by eMotion software. eMotion, a facial emotion recognition software, developed by the ISLA Laboratory at the Universiteit van Amsterdam is constructed by a face tracking algorithm. eMotion handles the

following process: (1) Face tracking: one's face captured by the webcam is tracked and detected; (2) Feature extraction: the moving vectors of motion units (MUs) on one's face are extracted and computed; (3) Facial emotion assessment: the moving vectors were classified and assessed the possibility on seven primary emotions (neutral, happy, surprise, angry, disgust, fear, sad), defined by FACS (Sebe et al., 2006). A screen shot of the face tracking and the emotion recognition by eMotion software is shown in Fig. 4. Then, facial emotion is transferred to the values of valance and arousal according to Shu's study result as Table 4.

Therefore, psycho- emotion defined with users' psychological responds is measured on the dimension of arousal and valance of SAM. The measurement is presented on Google on-line Docs.

Table4. The definition of the emotion measurement

mode	Dimension	Measurement Tool
Psycho-emotion	Valance	An emotion result from one's self-report on Self-Assessment Manikin Questionnaire.
	Arousal	
Facial emotion	Valance	The values of valance and arousal correspond to the emotions identified by FACS.
	Arousal	

4 Result

4.1 The correlation between facial emotion and psycho- emotion

The correlation analysis result between facial emotion and psycho- emotion is showed as Table 5. The correlation coefficient of .859 was founded to be statistically significant at .05

Table 5 The correlation between facial emotion and psycho- emotion

	psycho- emotion	facial emotion
psycho- emotion	1	.859**
facial emotion	.859**	1

4.2 The Commercial website interfaces effects of facial emotion

To compare the two emotional perceptions of nine webpages, the descriptive statistics and one-way ANOVA analysis shows that the website design factors significantly effect on both users' psycho-($F=13.559$, $p<0.001$) and facial emotion ($F=7.014$, $p<0.001$) responses.(Table 6) LSD post-analysis indicates sample 3(warm, medium size image) induces users' highest psycho-emotion; and sample 4 (neutral, medium size image induces users' lowest psycho-emotion. In addition, sample 1(warm, large size image) produce highest facial-emotion; and sample 9 (neutral, large size image induces users' lowest facial-emotion.

Table 6. ANOVA analysis of website design factors to users' emotion

Sample	<i>Psych-Arousal</i>		<i>Psych-Valance</i>		<i>Faial Valance</i>		<i>Facial Arousal</i>		<i>psycho- emotion</i>	<i>facial emotion</i>
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	Mean
1	5.03	1.91	6.03	1.77	5.98	1.15	4.94	1.07	5.53	5.45
2	4.13	1.56	4.66	1.86	5.02	1.36	4.89	1.04	4.39	4.95
3	5.53	1.78	6.28	1.85	5.90	1.17	4.91	1.04	5.90	5.40
4	2.91	1.61	3.16	1.85	4.62	1.42	4.85	1.14	3.03	4.73
5	5.09	1.82	5.53	1.70	5.27	1.07	4.43	1.00	5.31	4.85
6	4.69	2.19	5.00	2.23	5.50	1.35	4.81	1.09	4.84	5.15
7	3.09	1.87	3.13	1.68	4.77	0.94	4.20	1.02	3.10	4.48
8	4.47	1.48	5.56	1.83	5.81	1.31	4.97	1.03	5.01	5.39
9	3.28	1.92	3.81	2.09	4.73	0.95	4.23	0.99	3.54	4.47
F	8.95		12.85		6.26		2.88		13.559	7.014
P	<05		<05		<05		<05		.000***	.000***

4.3 Quantification Theory Type I : The relationship between web design factors and emotion

Adopt Quantification Theory Type I to analyze the relationship between website design factors and facial emotion. The facial emotion is dependent variable, and website design factors are independent variable. Website design factors are items, and each levels are categories. According to principle of Quantification theory I, higher partial correlation coefficient, score and range of category yield more significant effects on facial emotion. The category score means the positive or negative regressive coefficient upon facial emotion. The regression model was verified the reliability with t test of multiple correlation coefficient and partial correlation coefficient (Multiple correlation =0.842 , $R^2 = 0.710$). The regression equation is shown as Table 7.

The higher partial correlation coefficient of color(0.80) and Image size(0.63) yield more significant effects on facial emotion. Neutral and small image size with negative score might induce less valence and arousal. Besides, color (range=0.98) might have more significant effects on facial emotion than than image size(0.57).

Table 7. Quantified score of website design factors

Items	Partial Correlation Coefficient	category	Score			Range
			Valence	Arousal	Facial emotion(Y ₂)	
Color (X ₁)	0.80	warm(X ₁₁)	0.65	0.25	0.45	0.98
		cold(X ₁₂)	0.05	0.10	0.07	
		neutral(X ₁₃)	-0.70	-0.35	-0.52	
Image Size(X ₂)	0.63	large (X ₂₁)	0.33	0.15	0.24	0.57
		medium (X ₂₂)	0.04	0.13	0.09	
		small (X ₂₃)	-0.38	-0.28	-0.33	
		constant	5.39	4.79	5.09	
Y _F =5.09+0.45 X ₁₁ +0.07 X ₁₂ -0.52 X ₁₃ +0.24 X ₂₁ +0.09 X ₂₂ -0.33 X ₂₃						
Multiple correlation =0.342 • R ² =0.710						

5 Conclusion

This study would mainly compare the effect of website design factors to psychological and facial emotion. Both valence and arousal are measured in psychological, facial emotion. Color and image size are the most essential design factors from the expert group discussion. 9 website samples are designed in accordance to the variables of the two design factors for the experiments. There high correlation might referred that users' have similar psycho- and facial emotion responses to website appearance. Website design factors are significant effect on psycho- and facial emotion. Neutral color induces lower psycho- and facial emotion; and warm color attracts higher psycho- valence and arousal. Regression model results color has higher coefficient score than image size. Neutral color and small image size score have negative coefficient. It might inferred that commercial website with neutral color and small image size would lower users' emotion. The regression model also might provide a computational model for develop an adapted emotional design for website.

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Economics 2

Roma

2015/07/22 Wednesday 13:30-15:00

Session Chair: **Prof. Chih-Chiang Hsu**

BREFM-22384

European Central Bank (ECB) and The Federal Reserve System (FED) Policies and Objectives towards Unemployment

Pellegrino Manfra | *City University New York*

BREFM-22437

Spatial Competition in the Durable-Goods Market with Endogenous Innovation

Fred K.T. Ku | *Chinese University of Hong Kong*

BREFM-22825

Financial Development and Income Inequality: New Evidence from Panel Data

Ting-Cih Chen | *National Central University*

Chih-Chiang Hsu | *National Central University*

BREFM-22833

Financial Inclusion, ICBT and the Role of ICT in COMESA

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Finance and Capital Accumulation in Singapore - A Cointegration and Impulse Response Analysis

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**European Central Bank (ECB) and The Federal Reserve System (FED)
Policies and Objectives towards Unemployment**

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ABSTRACT

This article examines the world's two most prominent central banks— European Central Bank (ECB) and the Federal Reserve System (FED) and their recent expansionary monetary policy to solve the high unemployment rate in the European Monetary Union and the US.

The policies of the FED have been successful. Unemployment in the US has declined from 10.7% in 2008 to about 5.5 in March 2015 where more than 7 million jobs have been created. On the other hand the ECB has no mandate to solve unemployment. The average unemployment rate in the European Monetary Union at the height of the crisis was lower than the US but by 2015 – reached record high- to 11.8%. with no end in sight.

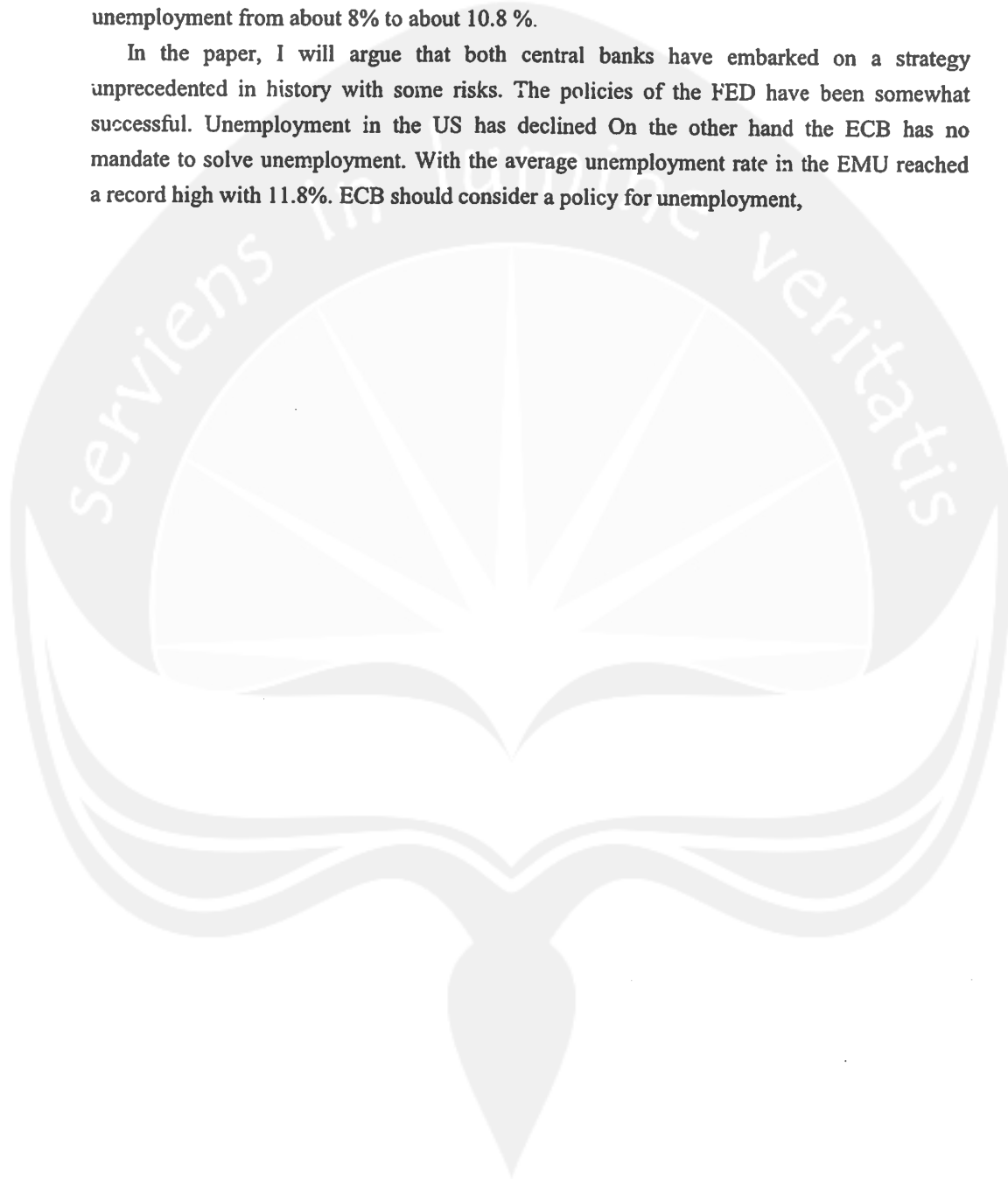
The primary goal of the ECB as set forth by the Maastricht Treaty is to “maintain price stability” (Article 105.1). The treaty further instructs the Eurosystem to “support the general economic policies” (Article 105.1) in the euro area without prejudice to the goal of price stability. Thus, the treaty makes it clear that any other objectives are secondary to that of price stability.

The FED on the other hand has three policy goals: “maximum employment, stable prices and moderate long-term interest rates” Unlike the Eurosystem's mandate, price stability is not given a higher priority than the other goals. Clearly, the policymakers of the FED must assign at least an implicit ranking to these goals; in the long-run all three goals are compatible.

Confronting the recent high unemployment, the FED has announced a series round of “quantitative easing,” to stimulate the economy. The FED has declining purchase of \$85 billion of mortgage back securities each month. The FED last year announced that it would discontinue those purchases. In addition the FED has outlined that for as long “the labor market does not improve substantially” and “will maintain “a highly accommodative stance in monetary policy...for a considerable time after the economic recovery strengthens” It specifically noted that its highly accommodative stance would continue at least until mid 2015. The FEDs QE4 may see similarities with the open-ended strategy of the ECB but unemployment in EU is not declining but has been increasing. On July 26, 2012, Mario Draghi, President of the ECB, pledged “The ECB is ready to do whatever it takes to preserve the euro,” The ECB will purchase short-term Italian, Spanish and other countries bonds without any limit. Thus the ECB can substantially reduce the interest rate on the

sovereign debt of those countries, helping them to grow but remove the discipline that the bond market has had on their fiscal actions. But unemployment in these two countries has remained high. Spain has reached more than 25% and Italy in particular has increased their unemployment from about 8% to about 10.8 %.

In the paper, I will argue that both central banks have embarked on a strategy unprecedented in history with some risks. The policies of the FED have been somewhat successful. Unemployment in the US has declined. On the other hand the ECB has no mandate to solve unemployment. With the average unemployment rate in the EMU reached a record high with 11.8%. ECB should consider a policy for unemployment,



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Spatial Competition in the Durable-Goods Market with Endogenous Innovation

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ABSTRACT

Most of the studies in the literature of durable-goods focus on the monopoly setting. However, it is obvious that the real durable-goods markets usually have more than one dominant firm. For instance, Intel and AMD are competing in the computer chipset market, while Apple and Samsung are the main competitors in the smartphone market - all these are examples that completing firms in the particular industry are producing horizontally differentiated durable-goods. One key feature of these markets is that firms are all devoted heavily to research and development (R&D) activities and rapidly introduce new products. Apparently, current literature which ignores market competition is not enough to understand the nature of innovation by an individual firm in this setting, and this study aims to fill this gap.

We find that duopolist firms producing differentiated durable goods face time-inconsistency in innovation decision, similar to the case of a monopoly. We show that when a firm can profitably introduce new units only if it is a single innovator, the ability to commit to a future R&D decision can solve the time-inconsistency problem of innovation and raise profitability. By contrast, if the market is large enough to accommodate two firms (double innovation), the ability to commit does not benefit firms. We also show that in a non-commitment setting, the duopolist has a stronger incentive to innovate than a monopolist does if it expects itself to be the single innovator, while the incentive is the same across the two market structure when double innovation is expected.

Keyword: Research and Development (R&D), Durable-goods, Innovation, Time-inconsistency

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Financial Development and Income Inequality: New Evidence from Panel Data

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Abstract

This paper examines this issue by testing the linear and nonlinear relationships in a panel data set of 47 countries over the period 1980–2005. We suggest using the panel threshold regression with common correlated effects and find strong evidence of a two-regime split in our sample. Compared to the existing results, financial intermediary development has a negative impact on the income distribution of those developing countries. By contrast, developed countries with better financial sector development tend to experience lower income inequality. Moreover, financial development has a greater effect in the developed countries. To assess the robustness of our results, we also use different measures of financial development and control for the possible endogeneity.

Keywords: Financial development, Income distribution, Panel Data

There is a growing body of literature that points out that economic growth goes hand in hand with financial development (Levine 1997, 1999). Economic growth provides the wherewithal to develop a financial structure, while a financial structure in turn allows for higher economic growth since the diversification of idiosyncratic risks and the relaxation of credit market constraints may lead to improvements in income and risk sharing. Although the linkage between financial development and economic growth has been well established, the definite impact of financial development on the distribution of income has not been identified.

In this paper we focus on the role of financial development in affecting the allocation of resources and the distribution of income. Two various theoretical models have made different predictions regarding the relationship between financial development and income inequality. Greenwood and Jovanovic (1990) argue that there exists an inverted U-shaped relationship between financial sector development and income inequality. In their model, in the initial stage

of development, only the rich can afford to access and directly profit from better financial markets. At a higher level of development, since an extensive financial structure is fully developed, the transaction costs of using the financial service decrease and more people gain access to the system so that the degree of income inequality will decline.

In contrast to the inverted U-shaped statement, as proposed by Greenwood and Jovanovic (1990), Banerjee and Newman (1993) and Galor and Zeira (1993) suggest a negative and linear relationship between financial development and income inequality. More specifically, their models indicate that in the presence of capital market imperfections which may be especially binding on the poor who do not have sufficient wealth for collateral or credit, only the rich can borrow enough to invest in human capital or higher-return projects and benefit from the financial institutions. Consequently, by eliminating capital market imperfections and providing more opportunities for the poor to have access to financial markets, the distribution of income can be improved.

Existing theories provide conflicting predictions regarding the impact of financial development on the distribution of income. In terms of empirical results, the relationship between the two is also ambiguous. The majority of empirical studies to date have reported that an increase in financial development reduces income inequality. For example, Li et al. (1998) employ a data set for 49 countries to explore the relationship between financial development and income inequality and show that better functioning financial markets are strongly related to lower income inequality. Similarly, Clarke et al. (2006) examine the relationship between finance and income inequality for 83 developed and developing countries between 1960 and 1995, and find that inequality is lower in countries with better-developed financial sectors. More recently, Beck et al. (2007) and Claessens and Perotti (2007) reveal that financial development not only promotes economic growth, but also reduces poverty.

From the country-specific experience, Liang (2006) demonstrates that financial development significantly contributes to the reduction in rural income distribution in China and rules out the possibility of an inverted U-shaped relationship. Motonishi (2006) mentions that financial development ameliorates the income shares of the poor and boosts the productivity of other sectors in Thailand. Bittencourt (2010) concludes that financial development eases access to financial services and helps to reduce income inequality in Brazil. By using annual time series data, Ang (2010) also indicates that financial development improves the income distribution in India. In a similar study, Shahbaz and Islam (2011) explore the linkage between financial development and income inequality and do not find support for the inverted U-shaped in Pakistan. Jalil and Feridun (2011) investigate the long-run relationship between financial

development and income inequality in China, finding that a well-developed financial system tends to reduce the income inequality.

Apart from the inequality-narrowing prediction of financial development, by using a pooled-panel data approach, Jalilian and Kirkpatrick (2005) indicate that, up to a threshold level of economic development, financial sector growth contributes to poverty reduction through the growth-enhancing effect. On the other hand, by employing a variety of financial indicators, Law and Tan (2009) show that financial market development is very weak and statistically insignificant in reducing income inequality in Malaysia.

This paper reinvestigates this issue by testing the linear and nonlinear relationships in a panel data set of 47 countries over the period 1980–2005. Following Clarke et al. (2006), Beck et al. (2007) and Law and Tan (2009), among others, two financial development measures are utilized: the credit to the private sector by financial intermediaries over GDP and the claims on the nonfinancial domestic sector by deposit money banks divided by GDP. The explanatory variables include the schooling, trade, inflation, government expenditure and the growth of GDP.

The main contribution in this paper is as follows. Instead of appealing to the conventional interaction methodology, we not only adopt the panel threshold regressions with fixed effects proposed by Hansen (1999) but also consider the common correlated effects (CCE). This is because countries, especially the well-developed, are closely connected with finance and trade due to globalization of economic activity and market integration processes. Therefore, cross-sectional dependence appears naturally when studying economic data. If we neglect the possibility of cross-sectional dependence in panel data models, the estimator will be substantially biased. For this reason, we apply the common correlated effects discussed in Pesaran (2006) to our panel threshold models. In this way, we can avoid estimation bias and obtain a consistent estimator. To further test the robustness of our results, we implement the threshold regression with the instrumental variables (IV) approach of Caner and Hansen (2004) as well.

The empirical investigation of this paper yields several results. Firstly, based on the threshold regressions, our results show that financial development indeed plays a significant role in determining the relationship between financial development and income inequality, with financial development going hand in hand with inequality in the regime of less financial development but being negatively associated with inequality in the regime of high financial development. This finding is consistent with the inverted U-shaped argument suggested by Greenwood and Jovanovic (1990). Secondly, the impact of financial development on income

distribution is conditional on the level of income. For countries with higher income, the estimated effect of financial development on income distribution is significantly negative, whereas it is positive and statistically significant for countries with lower income. This result indicates that developed financial services are often unavailable to the poor in countries with lower income, hence financial development can exacerbate income distribution. However, for countries with higher income, financial services development may benefit the poor greatly due to the relaxation of credit constraints, and thus the inequality will be improved. Thirdly, we find that economic growth exists a nonlinear effect on income distribution when using income as a threshold. This result tends to agree with the argument proposed by Kuznets (1995) that income inequality has an inverted U-shaped relationship with economic growth. Finally, in the low-financial-development and low-income regime, the estimated coefficients of financial development are smaller in absolute value than in the high-financial-development and high-income regime, meaning that financial development has a greater equality-enhancing effect on the high-financial-development and high-income countries.

From a policy perspective, the results indicate that for countries with well-developed economies and financial sectors, the governments may consider financial reforms as an alternative way of combatting income inequality. For those countries whose income and financial systems are less developed, the governments must impose financial restrictions, but at the same time they may face with the choice of income inequality and economic growth.

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Financial Inclusion, ICBT and the Role of ICT in COMESA

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Abstract

The unbanked are not financially inactive and neither do they consume all of their income. Financial inclusion has quickly become a policy priority in the global economy. One of the reasons is because of the negative macro economy consequences of the informal sector which includes an informal financial system and informal trade. Informal Cross Border Trade (ICBT) is prevalent in Africa and particularly in the Common Market for Eastern and Southern Africa (COMESA) region. This has negative impact on trade and other macro statistics for member economies and the region as a whole. Financial inclusion is a possible channel towards formalisation of these firms. The paper further discusses the role of developments in Information and Communications Technology (ICT) in reaching out to the financially excluded. Trend analysis shows a strong correlation between developments in ICT and Intra-Regional Trade in COMESA. The paper is a preliminary, non-technical discussion.

Keywords: Financial Inclusion, Informal Cross Border Trade, Information and Communications Technology, COMESA.

Introduction

The world's financially excluded population is certainly financially active and although they do not use formal regularised financial institutions, it does not mean they do not borrow, save or invest. Individuals, households and firms who are not financially included do not necessarily consume all their income but are active in a parallel economy all together. Financial inclusion is increasingly recognized as fundamental for development as it can help poor households improve their lives while also spurring inclusive economic growth. The positive effects that are associated with financial inclusion are the advantages of network effects for participants, the expanding value of the overall financial system, and a more effective monetary policy resulting from a greater participation [1]. According to Merhotra et al. [2] financial inclusion is thought to be a "quasi-public good" as it meets the conditions of non-rivalness in consumption and non-excludability to a large degree.

Defining Financial Inclusion

Financial inclusion is usually defined as the proportion of individuals and firms that have access to or use financial services [3]. Burkett and Sheehan [4] define financial exclusion as:

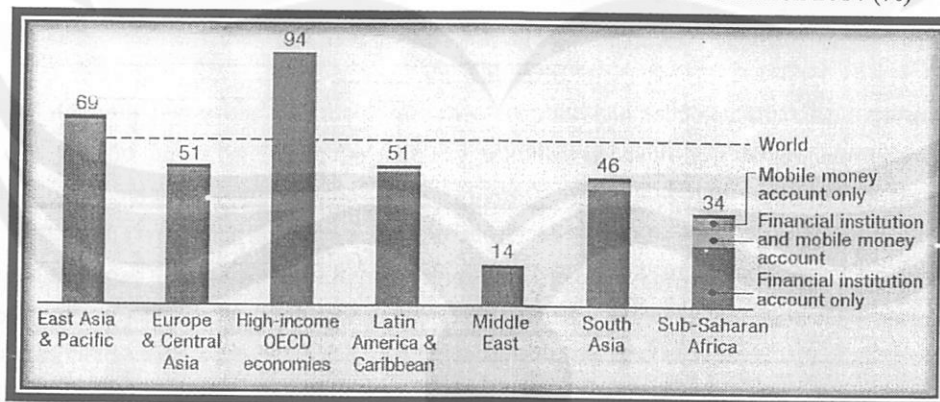
A process whereby a person, group or organisation lacks or is denied access to affordable, appropriate and fair financial products and services, with the result that their ability to participate fully in social and economic activities is reduced, financial hardship is increased, and poverty (measured by income, debt and assets) is exacerbated.

Consequences of financial exclusion will vary depending on the nature and extent of services denied. However the potential costs of incomplete participation in the financial system and how informal markets are driven by various barriers to the regulated financial system is still not explicitly addressed in the literature. This is the gap that this research paper seeks to fill.

Financial Inclusion: Globally, In Africa and the COMESA Region

Financial exclusion worldwide is still prevalent. Most financial inclusion data is survey data as the Global Findex data of 2011 showed that half of the adult population in the world, 2.5 billion people, are 'unbanked', meaning that they do not have access to a bank account at a formal financial institution [5]. This figure reduced to 2 billion however as of the 2014 surveys as shown in Figure 1 [6].

Figure 1: Adults with an account at a formal financial institution 2014 (%)



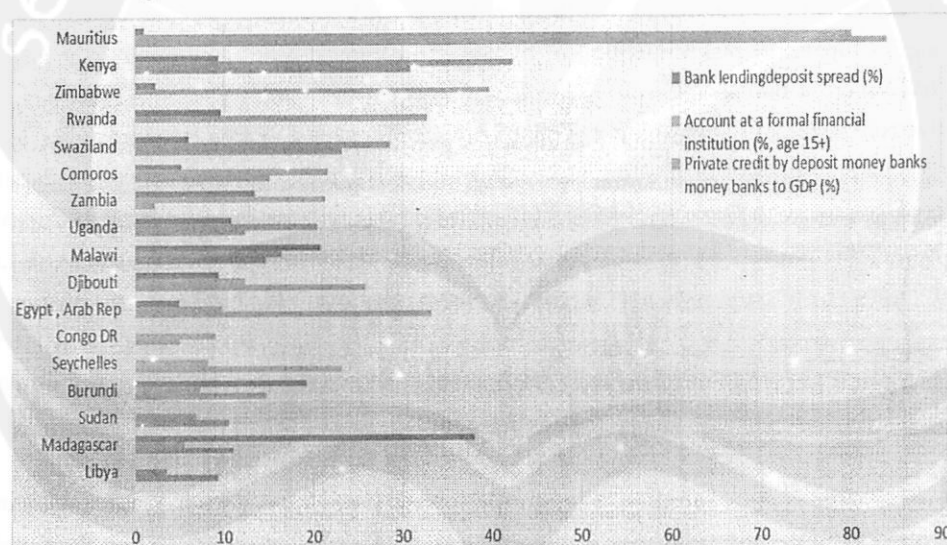
Source: [6]

Financial systems in Africa are still generally lagging behind those in other developing economies (Figure 1). Africa is the second lowest region in the globe in terms of adults with a bank account. Overall, 34% of adults in the Africa region have an account as of 2014 [6]. As of 2011, within Africa, there was a large variation in account ownership: ranging from 51%

in Southern Africa to 11% in Central Africa [5]. The low level of financial inclusion in Africa is reflected in constraints on both the demand and the supply side of the economy. Existing financial systems are underdeveloped, credit reporting from financial institutions is lacking and the level of financial literacy is often poor. Financial inclusion is further limited by low-quality financial infrastructure and the small size of many African economies.

COMESA is a huge regional market in Africa, accounting for 35 percent of the 54 countries on the African continent. COMESA's total geographic area of 11.6 million square km covers 38 percent of the African continent; and its population of 444 million inhabitants (in 2011) accounts for 43 percent of Africa's total population. Financial inclusion varies widely within the COMESA Region (Figure 2), with 3.5 percent being the lowest amount of adults (age 15 and above) with an account at a formal financial institution (Libya) and 80.1 percent being the highest (Mauritius) in terms of averages between 2009 and 2011 [3]. Formal financial services are dominated by banks with deposits being more common than loans.

Figure 2: Financial Inclusion in COMESA Countries, Averages, 2009–11



Source: [3] and Author computations

One of the challenges faced by member countries in the implementation of macro-economic convergence criteria in COMESA is undiversified nature of the financial markets and instruments and weak monetary transmission mechanisms and financial inclusion may improve both of these obstacles. On the latter, increased financial inclusion ensures more effective monetary policy because it increases the reach of the policy. On the former, more participation is likely to increase the demand for diversified instruments.

ICBT: Definition, Benefits and Challenges to the Economy

The informal economy is multi-faceted comprising of different sectors or markets and engages in diverse activities. It can include informal labour markets, informal financial sectors and informal corporate or business sectors. Because of its heterogeneous nature, researchers have found it difficult to come up with a precise single definition of informality. This paper will focus on informal corporate or business sector that is engaged in informal cross border trade (ICBT). The informal sector is the part of the economy, which is characterised by entrepreneurs operating without licences or titled property rights and doing family-based businesses that do not generate taxes [7]. For purposes of this paper, (ICBT) is generally defined as an economic activity that is legal but unregulated, and refers to unrecorded business transactions undertaken across the borders [8]. It includes goods moved through unofficial and official trade routes (through under-invoicing and mis-declarations of cargo).

Many firms in the developing world—including a majority of micro, small and medium enterprises— operate in the informal economy. The majority of the African economies remain reliant on cash, implying that the population still have their trust in physical money (although Chipeta [9] makes mention of indigenous/informal commodity money but this is less likely across borders). On the other hand, informal economies can potentially play a positive role, especially in developing countries where they may be viewed as the nursery of future economic growth in the formal economy. In economies and business environments hindered by overly excessive barriers and poorly designed regulations, informality can provide an alternative to entrepreneurs and small firms. In such situations, the absence of an informal sector can result in a far greater waste of resources. If costs to start and run a business are binding, the informal sector can benefit firms – to the extent that they may grow to be successful formal sector firms – by helping them avoid excessive costs of being formal (e.g. taxes, pension contributions, and minimum wages).

However, to date, there is still limited information on the dimension of ICBT as the tools for its measurement have not been very well developed. However most small and marginalised enterprises are often clandestine, unregistered and operated by the individuals who hold assets without property rights or representations which the financiers cannot use as assets in the market. The situation has had some adverse impact on the estimation and reporting of intra-African trade and under estimated figures in national trade statistics. GDP could be far greater if the potential enterprises of the informal sector could also be included. The average contribution by SMEs to GDP in the COMESA region is estimated at 20-25 percent, with a minimum and maximum contribution of 12 percent and 39 percent attributed to Sudan and Malawi respectively [10]. This paper argues that increase in financial inclusion in the

COMESA economic region will reduce informal trade and increase intra-regional trade in COMESA though the benefits that financial inclusion makes available to businesses as discussed herein.

Challenges facing Informal Traders

Informal firms face a variety of constraints, making it harder for them to do business and grow. The main barriers to access to formal financial accounts are costs, distances and bureaucracy [3]. Informal firms claim lack of access to finance as the most important barrier they face in their operations [11]. Thus one of the greatest needs of informal traders is improved access to financial services—not just loans, but savings, insurance, payments, pensions, and other products. When coupled with related nonfinancial services, such as consumer awareness, training, and market information, it can lead to breakthrough opportunities for people who have had limited economic avenues. The region's small and medium enterprises are a key driver of growth and jobs in the private sector [12]. The majority of the SMEs that were interviewed during the profiling exercise that was undertaken by the COMESA Secretariat considered the shortage of suitable finance and use of old and rudimentary equipment as a major constraint that has hampered the production of quality products and productivity [10].

Financial Inclusion and Informal Trade

Cross-country studies have shown that countries with more developed formal financial systems record faster declines in income inequality and poverty levels [13]. Besides the broader impact on growth and redistribution for poor people, access to credit, savings and payment services provides opportunities to increase their income through three channels. These are new economic opportunities, better management of risk and exchange of goods and services. In many instances, informal trade represents the only type of exchange that is possible under conditions prevailing in some regional economic communities. Poor regional infrastructure and communications often render near-impossible “official” trade between neighbouring countries. In Africa intra-Africa trade is quite diversified compared with Africa's trade with the rest of the world, with a large part of which is informal cross border trade (ICBT).

The banks/financial institutions are not inclined to grant credit facilities to SME's because the units are in the informal sector and the owners/promoters of these enterprises are not in a position to provide the comfort of collateral security to the banks. Banks are not as common a source of financing among informal firms. Use of loans and bank accounts for business by informal firms is very low and a significant majority of firms finance their day-to-day

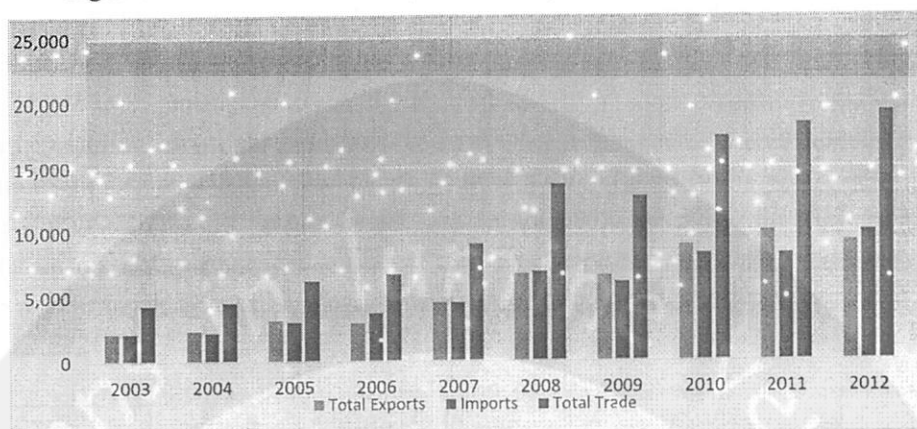
operations and investments through sources other than financial institutions (internal funds, moneylenders, family and friends).

On the one hand, financial services may contribute to facilitate trade flows, to reduce their cost and to maximize their developmental impact. On the other hand, increased trade expands the demand for financial services and policy makers have to have infrastructures in place to accommodate that demand. Also increased financial inclusion means increased access to credit, a process that will attract more entrepreneurs to take up business opportunities and increase trade. Increased trade will further increase demand for financial services and so on. Enhancing the financial inclusion of informal firms interested in registering can potentially help them grow and pave their path toward formalization. The availability of credit can enable microenterprises to improve their production capacities as well as production efficiency, as well as hire more skilled workers and generate higher revenues and profits. In the process they will also be exposed to credit products from the formal sector.

The existence of ICBT directly implies the existence of an informal financial sector in African countries. This is mostly characterised by savings groups and credit associations consisting of people with similar commercial objectives, such as traders; similar religious beliefs, in the case of Christian and Muslim organisations; or social or youth clubs, town unions and moneylenders. In many African countries, most people in the middle- and lower-income brackets use informal or semi-formal savings clubs, associations and co-operatives to save money and access credit when necessary. Firstly, informal schemes can provide savings facilities and credit to poorer people at cheaper and more favourable terms than those of formal financial institutions. Secondly, in patronising informal financial institutions, people do not have to try to comply with the requirements necessary to open up savings or credit accounts at formal financial institutions. Informal financial institutions also do not require collateral, which gives them an edge over formal financial institutions. These institutions deserve attention and consideration in policy making.

Figure 3 shows the increasing trend in intra-COMESA Trade. These however are certainly missing the big proportion of informal trade that takes place across the borders. The presence of informal economy represents wastage and significant leakages from the circular flow of income, in the region. The fate of millions of potential entrepreneurs is trapped in a vicious circle of exclusion and they are unable to reap the fruits of integration in the region and globalisation, due to the inadequacy of access to the formal financial institutions.

Figure 3: Intra-COMESA Trade, 2003-2012 (Value in US \$ million)



Source: [10]

Towards a more Financially Inclusive COMESA

A first step to achieve required scale to increase access and reduce costs is to promote an enabling environment. As the speed of payments increases in domestic environments, banks, corporates, and consumers have come to expect faster and more efficient payments across borders. Increased financial inclusion will allow access and more affordable use of formal trade and thus likely reduce informal trade. Financial exclusion means the use of initiatives in the region such as the COMESA Clearing House that was established for the facilitation of the settlement of trade and services payments amongst Member States will be undermined. The Clearing House introduced the Regional Payment and Settlement System (REPSS), which allows Member States to transfer funds with speed and efficiency and at reduced costs within COMESA. If a significant amount of traders are operating outside the formal banking system, the system will undermine its reach and efficiency.

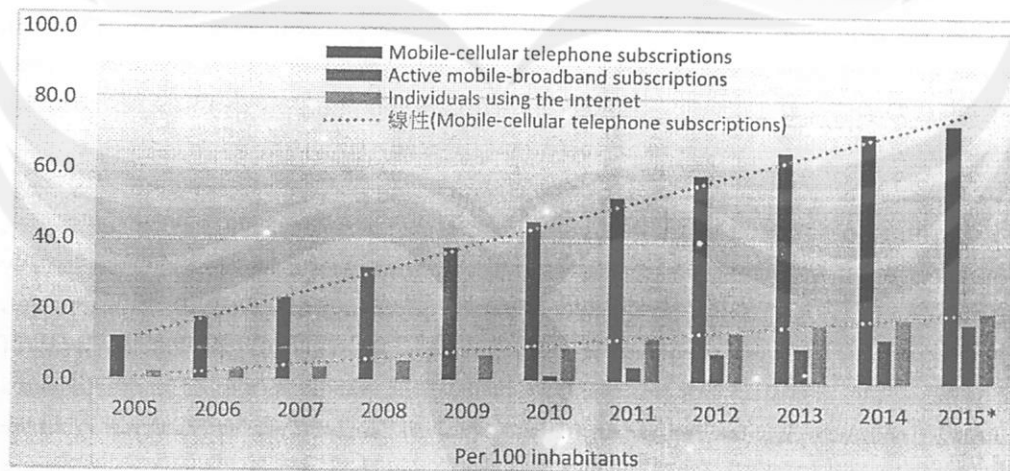
Previous studies suggest that the level of economic development, population density, infrastructure, outreach of bank branches, banks' overhead costs, and institutional capacity are important determinants of financial development. Higher income levels lower the barriers to financial inclusion and economic development and population density capture the effect of income and market size on the provision of financial services [14]. More densely populated areas should be easier to supply with financial services since infrastructure tend to be more widespread in these areas. Bank branches in densely populated areas are able to reach a larger number of customers, suggesting greater chances of being profitable and thus higher likelihood to be present.

Infrastructure is also deemed a determinant of financial inclusion since underdeveloped infrastructure makes it more expensive for financial institutions to provide their services. This may in turn have a negative impact on business activities since customers are more likely to face higher transaction costs, thus reducing the overall demand for financial services. Furthermore, since costs and distances are some of the main barriers to financial inclusion, the outreach of bank branches are assumed to be an important determinant of the outreach of the financial sector [14]. Moreover, institutional capacity, captured by a strong and well-regulated banking sector, is assumed to dampen the effect of macroeconomic shocks (or even prevent them). This suggests a positive relationship between measures of institutional development and financial inclusion [12].

The Role of ICT

There has been rapid growth in Information Communication Technology (ICT) in recent years. Figure 4 shows a consistent upward trend in Africa in various ICT development Indicators. Financial inclusion is one of the channels through which ICT affects growth thus it will contribute to growth of member countries. Building on previous work by [15, 14], investigate which factors that determine the outreach of the financial system. Their findings suggest that level of economic development, as well as population density and financial stability are of particularly importance for financial inclusion. They further conclude that electricity consumption and mobile phone diffusion have positive effects on financial access.

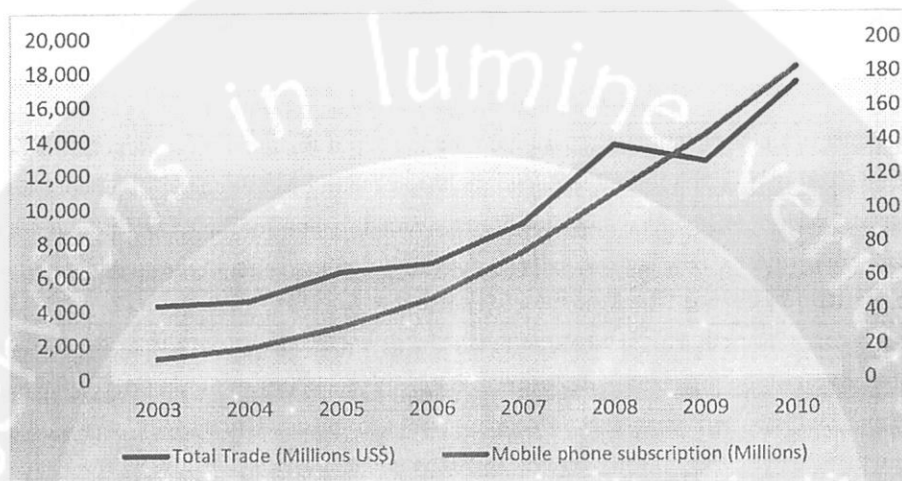
Figure 4: Growth in selected ICT Indicators in Africa per 100 Inhabitants



Source [16]; Data on active mobile-broadband subscriptions only available from 2010

Trends in Figure 5 below show high correlation between intraregional trade in the COMESA region and mobile phone subscription. There is a 98 percent correlation between the two variables. This does not mean causation however but does leave room for further research.

Figure 5: COMESA Intra Regional Trade and Mobile Phone Subscription in COMESA countries



Source: [17]

ICTs allow for greater financial inclusion, and the financial services sector is a primary driver of communications and network technology. It is striking to see the role that ICT and innovative business models have played in the explosive growth of financial inclusion. In Africa, the most visible case is Kenya, where active bank accounts have grown more than fourfold between 2007 and 2012. Innovative use of ICT has made management of large numbers of small transactions easier and the delivery of financial services in remote areas cheaper. Africa's recent surge in mobile phone penetration looks promising for future progress towards greater financial inclusion [18]. Technology developments such as telecommunication infrastructure and more advanced payment systems do not only reduce transaction costs but also expand reachable areas.

The development of technological innovations and new business models can facilitate overcoming several of the structural obstacles that affect the supply and demand for financial services. The catalytic role of technology and innovative business models to facilitate financial inclusion has been widely documented. For example, efforts by many countries in the use of non-banking correspondents or agents have improved physical coverage. This has helped to reach areas previously unserved due to the high cost of operating a bank branch. Nonetheless, by cutting costs even further, technology can make it feasible to reach an even

broader population and can help expand operations in remote or sparsely populated rural areas. The delivery of financial services through digital channels, in particular through mobile, offer the greatest potential for reducing the costs of reaching a broader population and expanding operations in remote areas, while also enhancing the convenience of accessing the services, thereby tackling two of the main obstacles limiting financial inclusion. Indeed, the experience of countries where digital payments are more widely available suggests that this can be certainly a relevant and fast way of expanding access to financial services.

Conclusion and Policy Recommendation

This paper is a non-technical discussion on the impact of financial inclusion on ICBT and the role ICT can play in improving financial inclusion for informal traders. The paper discussed potential benefits of financial inclusion for any economy and for the COMESA region in particular where ICBT is prevalent. As access to finance is the biggest challenge faced by informal firms, financial inclusion will reduce this problem and also help informal firms towards formalisation. This is likely to better the accuracy of trade statistics in the region by the reduction of the informal trade sector and thus better inform policy makers. Furthermore, financial inclusion will enable more people to engage in business through access to cheaper credit than that of the informal sector and thus may increase intra-regional trade. Further study is to be done to establish the empirical relationship between financial inclusion, ICBT and ICT.

It is noteworthy that data on ICBT is lacking by the very nature of it and data on financial inclusion is mainly survey data that has been collected starting in recent years. This makes the analysis somewhat challenging. Nevertheless, promotion of ICT for the purpose of improving financial inclusion will decrease ICBT in the COMESA region. Further attention needs to be placed on financial inclusion in the region not only due to the microeconomic but also macro economy benefits. Financial integration will better accelerate and consequent improvements in intra-regional trade with a more financially included COMESA.

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ISBSS-4449

Finance and Capital Accumulation in Singapore - A Cointegration and Impulse Response Analysis

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Abstract

This paper investigates the cointegrating relationship between the development of financial markets and the capital accumulation in Singapore. This paper considers three financial markets in Singapore, the banking market, the stock market and the insurance market which are the common path for firms to gather funds to invest in fixed capital. It uses per capita bank loans to measure the development of the credit market, the per capita stock market capitalization to measure the development of the stock market and total insurance funds to measure the development of insurance market. As for economic growth, it uses real gross fixed capital formation to indicate capital accumulation to enhance economic growth. Applying Johansen's method of testing for cointegration, the results show strong cointegrating relationship between banking market development and capital accumulation in Singapore. Using the impulse response functions as out-of-sample causality test, this paper further highlights that the three financial markets have strong influence of capital accumulation in Singapore.

JEL classification: O53

Key words: cointegration, financial development, economic growth, impulse response, gross fixed capital formation

1. Introduction

The relationship between financial economic development and economic growth is highly controversial. The supply leading-theories consider the development of financial sector as the precondition for economic growth, while the demand following theories consider financial development as merely responsive to economic growth. Understanding the relationship may allow appropriate government policies to be implemented which will facilitate economic development. Yet empirical evidence provided so far are inconclusive and contradictory. This study hopes to add on empirical evidence to resolve this controversy using the method of impulse response functions and variance decomposition analysis.

Section 2 provides a discussion of the theoretical foundation and surveys the empirical evidence between financial development and economic growth. Section 3 discusses the empirical methodology of this paper and Section 4 explains the measurement and data sources in detail. Section 5 presents the empirical findings and Section 6 concludes.

2. Theoretical Discussion and Empirical Evidence

In the early days, Schumpeter (1911) has highlighted the importance of financial sector in promoting entrepreneurship and economic growth. More recently, the endogenous growth models by Greenwood and Jovanovic (1990), Bencivenga and Smith (1991), King and Levine (1993a) and Pagano (1993) among others suggest that both the growth level and rate can be affected by financial development. However, another theory suggested by Robinson (1952), believe that as economic progresses, there will be increasing needs for sophisticated financial services and this lead to the development of financial sector¹ and hence financial sector follows economic development. The relationship may also change from supply leading during the early stages of economic development and reverse to demand following as the economy becomes more develop, as suggested by Patrick (1966). All these theories suggest a strong comovement between financial development indicator and economic growth indicator, although the direction of the causality is much debatable.

The exact relationship between finance and growth can only be resolved through empirical analysis. However, the evidence so far is inconclusive. Although King and Levine (1993b) use cross-sectional data on 80 countries to show finance causes growth, their methodology is questionable. Evidence from time series individual countries studies, such as by Jung (1986), Murinde and Eng (1994), Ahmed and Ansari (1998) and Fase and Abma (2003) provide evidence of finance causes growth in developing countries. Similarly, Wachtel and Rousseau (1996) and Rousseau and Wachtel (1998) also show finance causes growth in developed countries. However, the empirical work involving 16 countries provided by Demetriades and Hussein (1996) shows considerable evidence of bi-directional causality and some evidence of growth causes finance. As for stock market analysis, Levine (1991) and Levine and Zervos (1998) show that stock market positively predicts growth. But Harris (1997) studies find no evidence of stock market explains growth in per capita output.

The conflicting results could arise from sample selection bias, the use of different finance and growth indicators and also differences in research methodology. This paper overcomes some of these problems by using disaggregated financial indicators to study the development of different financial markets in affecting capital accumulation in Singapore.

¹ Joan Robinson declares that "where enterprise leads finance follows" in her 1952 publication, p 86.

3. Empirical Methodology

The conventional method in solving the causality issue between finance and growth is using the Granger causality method on time series data. This method involves regressing growth or finance indicators with lagged finance indicator and lagged growth indicator and then apply F test in hypothesis testing. This method can test for finance causes growth; growth causes growth, bi-directional causality or no causality.

But Granger (1988) has pointed out that complication will arise if the two series are cointegrated. By differencing the series alone may actually lead to specification bias of the model that produce spurious results. The appropriate method is to convert the model into an error correction model (ECM) framework by including an error correction term. In the models below, α and β are the estimates from the cointegrating vector and the term in parenthesis is the error correction term.

$$\Delta Y_t = \mu + \theta(Y_{t-1} - \alpha - \beta F_{t-1}) + \sum_{i=1}^m \alpha_i \Delta F_{t-i} + \sum_{j=1}^n \beta_j \Delta Y_{t-j} + U_t \quad (2a)$$

$$\Delta F_t = \mu + \phi(Y_{t-1} - \alpha - \beta F_{t-1}) + \sum_{i=1}^m \gamma_i \Delta F_{t-i} + \sum_{j=1}^n \delta_j \Delta Y_{t-j} + U_t \quad (2b)$$

When Y_t and F_t are cointegrated, F_t can Granger cause Y_t in two ways. One is through the lagged short run dynamic terms $\sum \alpha_i \neq 0$ and this can be tested using F test. The other is through the lagged error correction term if $\theta \neq 0$ and this can be tested using t-test. This link also represents the long run dynamics between finance and growth. Failure to include the error correction term with cointegrated process will result in models that are misspecified and the causality testing can lead to erroneous. The ECM based causality tests offer the additional advantage that the source of causation can be identified, in the form of either short run dynamics or long run disequilibrium adjustment.

Two methods to test for cointegration are commonly used in applied research. The first method, suggested by Engle and Granger (1987), involves using Augmented Dickey Fuller (ADF) test on the residual series of a cointegrated model. If the series are cointegrated the residual series should not have unit root. The second method, suggested by Johansen (1988), is a multivariate maximum likelihood estimation technique. It involves estimating a vector error correction model (VECM) of the form:

$$\Delta Z_t = \mu + \Gamma_1 \Delta Z_{t-1} + \Gamma_2 \Delta Z_{t-2} + \Gamma_3 \Delta Z_{t-3} + \dots + \Gamma_{p-1} \Delta Z_{t-p+1} + \Pi Z_{t-p} + \varepsilon_t \quad (3)$$

where Z_t is a $n \times 1$ vector of $I(1)$ variables indicating financial development and economic growth, $\Gamma_1, \Gamma_2, \dots, \Gamma_p$ and Π are $n \times n$ matrices of parameters to be estimated. Existence of cointegration implies that the matrix Π has non-zero rank $r < n$, equal to the number of linear combinations of the variables in Z_t that are stationary. Two tests can be used to test for cointegration. One is the λ_{trace} statistic while the other is the λ_{max} statistic. The statistic tests the null hypothesis of at most r cointegration vectors against an alternative of at least $r+1$.²

Thus Granger causality test can be used on the level series (if series are stationary), on the differenced series (if series are non-stationary and non-cointegrated), formulated in an error correction model framework (if series are cointegrated) or using Johansen test. The problem with this methodology is the difficulty in obtaining the appropriate framework due to low power of unit root test and cointegration test, and also the inability to detect causal effect due to low power of Granger causality test.

4. Measurement and Data Sources

This paper investigates the comovement between financial development and economic growth indicators by using individual countries time series data. This is also in line with the approach by Arestis and Demetriades (1997) and Wachtel and Rousseau (1996). Following the ideas of Masih and Masih (1996), annual data is used as the relationship between financial development and economic growth is likely to be a long term one.

There are different functions performed by financial sector and they influence growth differently³. It is necessary to use different financial indicators and growth indicators to study the long term movement between finance and growth indicators.

Based on the model by Pagano (1993), the growth indicators should reflect an improvement in productivity, an increase in investment or an increase in saving rate. Since the saving rate has an ambiguous effect on growth rate and the measurement of total factor productivity tend to be unreliable, the seasonal adjusted real gross domestic product per capita is used to approximate these two effects. The increase in investment can be captured by an increase in

² A full discussion of the test statistics is given in Johansen and Juselius (1990).

³ The survey by Levine (1997) highlights that financial sector performs five important roles that can promote economic development. They are (i) facilitating the trading, hedging, diversifying and pooling of risk, (ii) allocating resources; (iii) monitoring managers and exert corporate control, (iv) mobilizing savings and (v) facilitating the exchange of goods and services.

real gross fixed capital formation per capita and this is the second growth indicator. The data for both series are available from March 1985 to September 2002.

The problem of using aggregate financial data is that it will not explain how finance affects growth. In this paper, three types of financial indicators are used to represent three financial markets. The first type is the ratio of commercial bank loans to nominal gross domestic product. This indicator will capture the functions of commercial banks and the data is available from March 1985 to September 2002⁴. The second indicator is to represent the development of the stock market. It is proxied by the ratio of market capitalization of the Singapore stock market to nominal GDP and the data runs from December 1987 to September 2002⁵. The final financial indicator is to represent the development of the insurance market and this is proxied by the total insurance funds.⁶ The data runs from March 1991 to September 2002.

5. Empirical Results

The investigation begins with testing for unit root on all the growth and financial development series. Using ADF test which is the most common unit root test, the ADF test does not reject the null of a unit root for the data in levels and rejects the null for each of the differenced series. The findings imply that it is reasonable to model all of the relevant variables as non-stationary.

Table 1 : ADF Test for Unit Root

Data Series	Level	1 st differences
Real gross fixed capital formation per capita (GFCF)	-0.87	-10.93*
Ratio of bank loans to nominal GDP (BANK)	-1.01	-3.92*
Ratio of stock market capitalization to nominal GDP (STOCK)	-2.35	-7.80*
Insurance funds (INSUR)	-1.83	-5.26*

A* denote rejections of unit root at 1% level.

As Singapore is a small open economy, whatever effects between real and financial sector tends to reflect rapidly in the data. Thus a maximum of 8 lags is considered in the Johansen test for cointegration. Table 2 below shows the results of cointegration test. Rejection of the null hypothesis of no cointegration ($r=0$) coupled with a failure to reject the null of one

⁴ The data for bank loan are available monthly and hence aggregate of three months data is used.

⁵ The stock market capitalization is available monthly. Thus the data on the month of March, June, September and December are used.

⁶ The insurance fund is not normalized with nominal GDP because of its small value. Ideally non-life insurance funds should be used but the data is only available for total insurance funds.

cointegrating vector ($r=1$) provides evidence of a single long-run relationship in a given system.

Table 2: Johansen Test for Cointegration

System	Trace		Maximum eigenvalue	
	$r=0$	$r=1$	$r=0$	$r=1$
GFCF and BANK ($k=1$)	20.47**	2.11	18.37**	2.11
GFCF and STOCK ($k=2$)	16.55**	4.34	12.21	4.34
GFCF and INSUR ($k=6$)	16.10**	4.81	11.28	4.81

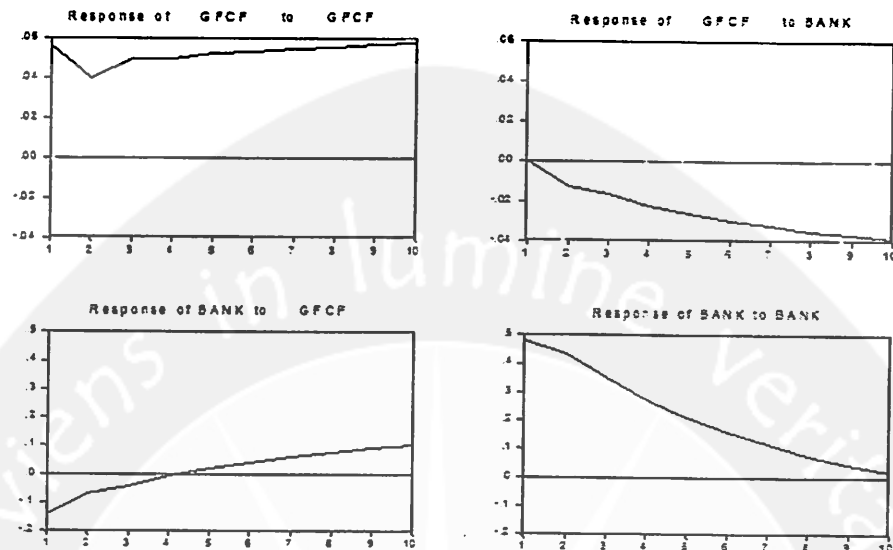
The term k is the lag at which the levels terms enter the test regressions. A * and ** denote rejection of the null hypothesis of no cointegration at the 1% and 5% respectively.

Out of the three systems considered, the results show the presence of cointegration in one system conclusively, which is GFCF and BANK. The other two systems, GFCF and STOCK and GFCF and INSUR have ambiguous results. While the trace test indicates the presence of cointegration, the maximum eigenvalue test shows otherwise. In view of the low power of cointegration test, these two systems are also treated as cointegrated. In all cases, the lag length is selected using AIC criteria.

5.1 Bank Loans and Capital Accumulation

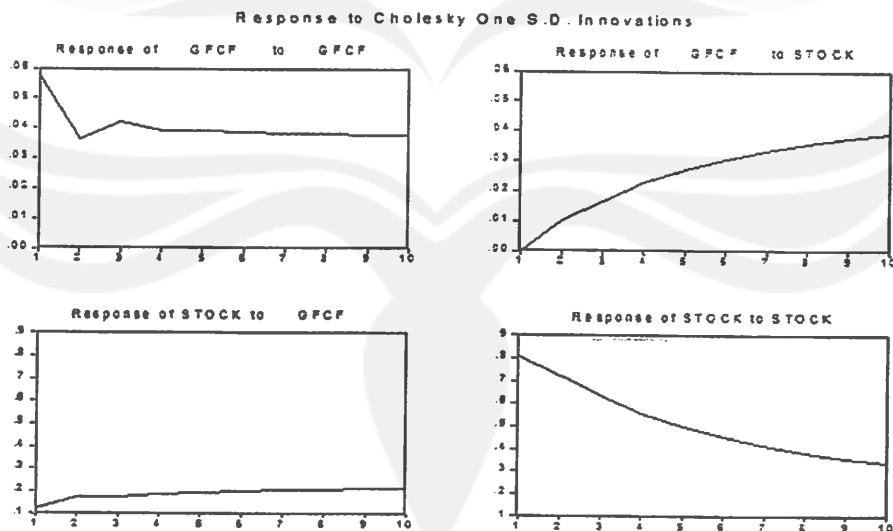
In Singapore, the commercial banks are the most important sources of finance for enterprises. The regression results using impulse response function shows that BANK response vigorously to one standard deviation shock in the GFCF.

Response to Cholesky One S.D. Innovations



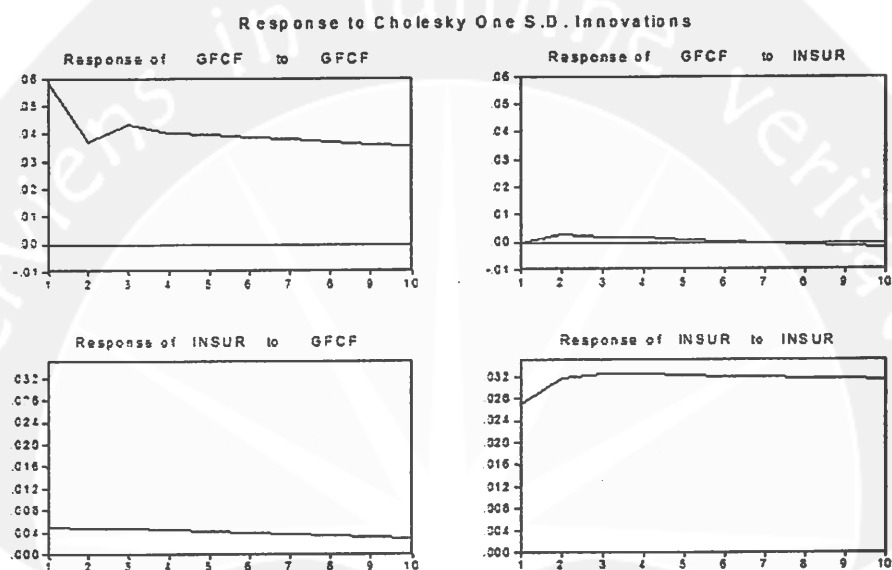
5.2 Stock Market and Capital Accumulation

The stock market provides an alternative source of funds for companies. The regression results using impulse response function shows that the reaction of STOCK on a standard deviation shock in GFCF is stronger than vice versa.



5.3 Insurance Market and Capital Accumulation

The role of insurance market is mainly risk hedging. With sufficient hedging, a firm may be more willing in committing investment projects that are more risky but returns are higher. The regression results using impulse response function shows that GFCF respond positively to a one standard deviation shock in INSUR but the respond the other way round is much weaker.



6. Summary and Concluding Remarks

The main purpose of this paper is to discern the causal relationship (in the Granger sense) between capital accumulation indicator and financial markets development indicators in the Singapore economy. The methodology involves using ADF test for unit roots and Johansen's test for cointegration to establish whether long term relationship between finance and capital accumulation occurs in Singapore. The impulse response functions are then constructed to further capture the out-of-sample Granger causality.

The evidence suggests that there is a long term relationship between banking industry and capital accumulation in Singapore. The evidence from the IRF further reinforce that the banking sector is the most important channel that firms obtain funds to finance fixed capital investment. This study also support the role of insurance market and stock market in promoting economic growth. But it is more likely that the commercial banks play the dominant role in this aspect in Singapore.

This study also highlight the benefits in using of disaggregated financial data in the study of financial development and economic growth, as suggested by Pagano (1993). It also highlights the danger of deriving conclusions based on very few indicators in multi-countries study. As different countries have different institutional characteristics and policies, the pathway which finance and growth affecting each other could be different. One should analyze the institutional characteristics of each country and select the appropriate financial indicators in a multi-countries study.

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Sociology / Law 1

Venezia

2015/07/22 Wednesday 13:30-15:00

Session Chair: ***Prof. Patcharin Sirasoonthorn***

ISBSS-4370

Residents' Attitude towards Physical Attitude in Long-term Care Facilities in Taiwan

Hui-Chi Huang | *Mackay Medical College*

Hsin-Chuan Su | *National Taipei University of Nursing and Health Sciences*

Shiang-Feng Wu | *National Taipei University of Nursing and Health Sciences*

ISBSS-4404

Use of Integrated Care Delivery to Promote Chronic Care Management among Older Indigenous People in Taiwan

Christine Po-Huei Wu | *Mennonite Christian Hospital*

ISBSS-4462

Human Trafficking in Thailand: The Major ASEAN Development Crisis

Patcharin Sirasoonthorn | *Faculty of Social Sciences, Naresuan University*

ISBSS-4474

Leisure Time Activities and Youth Risk Behavior: The Role of Social Context

Maizan Mohd Nor | *Universiti Teknologi MARA*

Mohd Salleh Aman | *University Malaya*

ISBSS-4525

Investigation of Attitude Towards the Elderly and Social Interaction Using Value and Lifestyle Segmentation: Approach Towards Intergenerational Society

Somkiat Eiamkanchanalai | *Chulalongkorn Business School*

Nuttapol Assarut | *Chulalongkorn Business School*

Suwanee Surasiengsunk | *Chulalongkorn Business School*

ISBSS-4316

Legal Development of Child-Marriage in Indonesia: Between Permitted and Prevented

Elisabeth Sundari | *Atma Jaya Yogyakarta University*

ISBSS-4370

**Residents' Attitude towards Physical Attitude in Long-term Care Facilities
in Taiwan**

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Abstract

Aims and objectives. This study explored residents' attitude on physical activities in long-term care facilities (LTCFs) in Taiwan.

Background. Increasing numbers of older people in Taiwan are being placed in LTCF. However, little research has been done to explore the value and meaning of physical activities from residents' attitude. Understanding residents' attitude on activities is necessary for institutions to plan and conduct activities that fully meet the residents' activity needs.

Design. An exploratory qualitative design.

Method. Qualitative research was conducted using in-depth interviews with 20 purposely sampled residents in LTCFs in Taiwan. Data were collected through semi-structured interviews. The constant comparative data analysis method was used throughout the research.

Results. Residents' perception on physical activities demonstrated three themes. The first theme, "Activities are benefit for health", includes recovering from physical disabilities, maintaining functional status, and promoting health. The second theme is "Improving social activities and felt well-being", which encompasses enhancing social interaction, enjoying spiritual happiness, increasing sensory perception, and having a sense of accomplishment. The last theme is "The fitness physical activities design for personal centered care", including the following factors: domination and control by others in the institutional lifestyle, lack of perceived meaning in organized activities, and discouragement of unsupervised and unrestricted activities.

Conclusions. The themes "Activities are benefit for health" and "Improving social activities and felt well-being" demonstrate the critical role activity plays and indicate that it positively affects residents' physical life. Institutions should use functional status as a guide to provide

appropriate activities to their residents. Institutions also need to provide activities that can energize their residents' lives. However, the theme of "The fitness physical activities design for personal centered care" encountered demonstrated that residents in LTCF feel their activity needs are not fully satisfied.

Relevance to clinical practice. For some countries this study is more relevant to occupational/physical therapy and not nursing. The understanding of residents' attitude on activities can help caregivers in LTCF plan and conduct physical activities that can meet their residents' needs. This information may also be useful to health care provider and family members.

Key words: physical activity, health, social activities, well-being, fitness, long-term care, residents

1. Introduction

Although many studies have found residents' physical activities (PA) in institutions too vary widely to similarities can be found. Mozley's (2001) literature review reveals activity consists of physical exercise, leisure activities, productive activities, and social activities. Anderson *et al.* (2009) interviewed residents in nursing home settings as well as their relatives and contact persons and found that activity included personal activities of physical living; mobility exercise; and social, creative, and mental activities. Hallaj *et al.* (2010) observed activity patterns of residents in Egypt and found PA included both physical and social activities. However, the scopes of activities in these studies are limited. A broad view of activity would include all activities residents undertake during their stay at institutions, including activities of physical living (ADLs), organized activities, personal activities, and so on.

Several studies have stressed that activities fall within the domain of quality of life or quality of care for residents in LTC institutions (Hallaj *et al.* 2010). However, little research has been done to explore the value and meaning of PA from residents' attitude. Attitude is the person's actual feeling or way of thinking about something or someone based on their perceptions, that perception is the use of the mind or the senses to comprehend or understanding a person's surroundings (Das & Phookun, 2014). Shedding light on this area would be of great value (Sandberg *et al.* 2002), especially in the area of activity needs and intention to perform activity.

Bowers *et al.* (2009) found most residents in LTCFs are quiet and obedient, with limited ability to communicate and an inability to identify and reveal their activity needs; they accept any activities that institutions provide. To make matters worse, family members and caregivers of institutions tend to ignore residents' attitude and opinions on their activity needs, which results in failure to meet residents' needs for proper activities (Bowers *et al.* 2009). But this issue has been around in health and social care for many years, and still very wide ranging practice development issues from facilities, occupation therapy, and not nursing. There were no any voices from residents for their attitude on physical actives.

1. Main Body

Background

The proportion of older people in Taiwan is increasing and society is also rapidly ageing. Active ageing is the process of optimizing opportunities for health, and it can enhance individuals' quality of life (Fjeld *et al.* 2002) but, with advancing years, the ageing process and the presence of chronic disease can lead to disability (Murtagh & Hubert 2004).

Hirvensalo *et al.* (2000) explored the care of older people in a community study and found that impaired mobility was a good predictor of mortality and dependence, while physical exercise may prevent disability and mortality. Therefore, PA care is promoted in the medical care in the LTCFs although, for safety reasons, the PA of the older residents is often limited (Kane 2001, Weiner *et al.* 2003). Huang and Li (2009) speculated that older residents with lower Activity Physical Living (ADL) scores may have a higher ratio of physical restraint, which would imply that those with a lower level of dependency may have been affected by their environment.

Aims.

The purpose of this study was to explore residents' attitude on PA in LTCFs in Taiwan. The following areas were examined: How do residents manage their PA? Please describe your feeling of PA? What is your expected of PA care?

Methods

This qualitative research study was conducted to gain information from residents about their attitude on PA in LTCFs. According to literature reviews, the knowledge of resident attitude towards PA care are little known or never studied before. Why residents living in LTCFs complain less respect from caregivers while at the same they accepted they stay in facilities benefit approaches.

Participants

The criteria of participants were that they were age more than 65 years residents and had been stayed at least three month in LTCFs, with the MMSE score at least more than 18 (and could speak and clearly express their attitude to PA even though, they had some degree of disability and immobility). There were twenty residents with 8 men and 12 female, with the mean age of 80 (ranged from 67 to 93) years old. Half percent of them had graduated from junior high school. The average score of Barthel's Index were 70 (SD=14.6, range=45-95) and they had stayed in their facilities with a mean of 2.66 years.

Data collection

The in-depth face-to-face interviews and five interviewers were recruited following semi-structured interview guide lasted between 40 to 120 minutes and were conducted between October 2009 and February 2010 at 13 LTCFs in Taiwan. Each participant contributed a unique perspective related to PA and/or their feeling.

Findings

The main result of this study in 20 resident's perception in LTCFs is a customized activities design. This customized design led to three themes emerging from the data: 'activities are benefit for health', 'Improving social activities and feeling well-being', and 'the fitness activities design for personal centered care'. Each of these themes is explored below, and for the purpose of this study.

Activities are benefit for health

This theme reveals the residents' management activities are benefit for health. Residents believed PA can strength and maintain their muscle of legs. Even though residents carry some degree disabilities but they still hope PA can declined their levels of functional statuses. Lastly, residents believed t PA can recurrence their muscle atrophic and even more they can leave the LTCF return to their home.

For example: "If you have feet weakened, after walking for a while, you can felt your feet was strengthen, and then can walk longer than before." (B resident, age, gender, ADL)

Participant N had survived from a stroke several years. She/He said *"If I am more depending on caregivers, my physical function will be declined than before."*; *"I also hope that the rehabilitation is good enough to help me to return before without relying on others' help, and then I can live with independently."* (N resident, age, gender, ADL)

Participant P had knee injury since fallen from bicycle exercise. *"I do exercise for half an hour every morning and night. I think my foot is very powerful and exercise is very good for my mind and can slow down the degrading of my physical function."* *"The power volume of my lung is better than non-regular exercises. I can sing a song I take part of a race of Karaoke always got prize (P resident, age, gender, ADL)*

According to the residents describe, they believed activities can maintain, recurrence, strength their health status.

Discussion

Even though interviewees felt that their physical functions were gradually degrading due to aging, they believed performing activities is a source of health. Consequently, they desired to participate in activities that could help them recover from physical disabilities, maintain their functional status, and promote their health. This can be used as an appropriate baseline for

caregivers to plan and conduct their residents' activities. Due to residents' performance of activities depending on their health status and functional ability (Hallaj *et al.* 2010), caregivers can use residents' functional status as a guide to planning proper activities that can be performed safely and effectively (Weeks *et al.* 2008, Chen 2010). It is a good starting point to choose light-intensity ADLs, such as standing and walking slowly. After that, residents with better physical ability can work toward health-promoting activities such as walking with sand bags and Tai Chi practice or rehabilitation activities such as lower limb exercise and wheelchair exercise.

Researchers (Andersson *et al.* 2007, Bowers *et al.* 2009) found severely disabled residents under unfavorable and unchangeable living condition in institutions are always quiet and unable to change their lifestyle. But participants in this study were able to express their attitude on activities under ample encouragement and patience. Residents confirmed that doing activities is a fundamental element to being human, and they also regarded doing activities as an essential part of their existence. Hence, caregivers should take this into consideration and spend more time and effort to communicate with their residents in order to understand their residents' activity needs. Meanwhile, it is important for residents and their family members to negotiate how their activities should be planned and implemented (Sargent *et al.* 2007).

Conclusion

Twenty residents' attitude on PA in this study were formulated into three themes: nurturing health, energizing life, and dilemma encountered. The themes, nurturing health and energizing life, demonstrate the critical role activities plays and indicate that activity has positive effects on residents' physical life. Institutions should use functional status as a guide to plan appropriate PA for their residents. Institutions also need to provide activities that can energize their residents' lives. However, the theme of dilemma encountered demonstrated that residents in LTC institutions feel their activity needs are not fully satisfied. To overcome this, institutions should provide more flexible resident-centric schedules and rules, provide meaningful activities, and allow unrestricted, unsupervised activities based on residents' health conditions.

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**Use of Integrated Care Delivery to Promote Chronic Care Management
among Older Indigenous People in Taiwan**

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Abstract

Taiwanese indigenous people have considerably higher rates of preventable chronic disease than Taiwanese non-Indigenous people. Behavioral health risk factors, including smoking, alcohol abuse, obesity and unhealthy eating habits contribute to the poor state of indigenous health. The government has realized that the promotion of population health should include indigenous people especially those who live in rural mountain areas. Integrated Delivery System (IDS) programs are, therefore, developed by the Bureau of National Health Insurance Taiwan to enhance access to health services for indigenous people in rural mountain areas. Research has revealed that IDS programs were effective in improving accessibility and comprehensiveness of health care to many indigenous communities. However, little evidence has been showed that the programs could effectively reduce the mortality in chronic diseases or had a better promotion of health among the members of indigenous communities. There is a need for developing integrated care management to improve the quality of chronic care and build health promotion capacity in indigenous communities. Our team developed a model of integrated care management to promote the delivery of chronic care of older indigenous people. The model includes five key elements, which are effective information systems, home visiting schemes, health education, preventive care delivery and telehealth services plan. We believe that health outcome for older indigenous people with chronic diseases will be improved through the delivery of integrated care model. This paper introduced the important elements in this integrated care model and highlights its useful application in future health promotion programs and chronic care management in the indigenous communities.

Keyword: integrated care, indigenous health, chronic disease

1. Introduction

As the prevalence of many chronic diseases, such as hypertension and diabetes continues to increase, health care must be respond to this challenge in an appropriate and cost-effectively way through continued care and self management, early detection and prompt treatment, and preventive care. The approach to promoting health is not only for general populations but

also for indigenous peoples. In addition, the socio-economic disadvantages and ill-health experienced by Taiwanese indigenous people. Studies showed that there is a clear relationship between the social disadvantages experienced by indigenous people and their current health status. These social disadvantages are reflected in measures of education, employment and income (Wang, 2015). Although IDS programs were effective in improving accessibility and universality of health care, little evidence showed the programs deliver very positive effects on the promotion of health to many indigenous communities. As a result, there is a need for developing a more comprehensive care model that can be applied to future health promotion programs and chronic care management among older indigenous communities. There are 16 indigenous peoples in Taiwan. Each indigenous group holds their specific culture and customs, and the notion of health. In this paper, the indigenous communities are referred to indigenous peoples living in Wongzon and Zhouxi, Taiwan.

2. Conceptual background

This paper concentrates on two focal concepts, namely chronic care management and self-management of chronic disease by older indigenous people, and the relationship between these concepts.

2.1 Chronic care management:

Chronic diseases influence all countries, and the increase in their prevalence is mainly attributable to changing lifestyles, better disease management and treatment and a better understanding of the factors associated with disease. WHO (2015) defined that chronic disease as 'diseases of long duration and generally slow progression.' This means that chronic diseases and conditions are the most common and costly of all health problems because the diseases cannot be cured once acquired. The literature has suggested that chronic disease management is an effective way of coordinating care and ensuring that people obtain the support they need at a suitable time (Singh, 2008). It also suggested that effective chronic disease management can lead to a better quality of life and improved health outcomes for people with chronic disease (Krause & Ouwens, 2005).

There are a number of multifaceted models being applied in chronic care. The choice of components within models has often not based on empirical status (Wanger et. al., 2001). Effective chronic disease management requires more than just adding new features to the existing model, it requires all components of the model that can be effective to enhance chronic care among patients, even further to improve individuals' health status and quality of their lives. Consequently, a comprehensive and appropriate model of chronic care needs to be patient-centred for the provision of better health care.

Moreover, chronic disease management is characterized by interactions between health care professionals and patients. In addition to a holistic management provided by health care professionals, patients with chronic disease should take responsibilities for their own health. Educating people to acquire self-management skills are imperative for a better management of chronic care. A notion of self-management is discussed later in the next section.

2.2 Self-management of chronic disease by older people

Self-management of chronic disease encompass a patient understanding the foundation for their disease conditions, being able to activate resources that will help them manage their conditions and ultimately adapt their life to living with the conditions. Self-management of care has been reported to help patient manage symptoms and contain use of health care resources for chronic conditions (Lorig, Sobel, Ritter, Hobbs & Laurent, 2001; Warsi, et al. 2014). However, people face a distinct challenges at each stage, self-management of chronic disease by older people is more likely to emerge differently from that undertaken by young people, including rearrange reprioritize parts of coping. Recognition of demands and priorities of older people can contribute to the development of self-management skills and implementation of health promotion activities. In addition, older indigenous people often insist different views on health because of their culture factor. Health care professionals have a responsibility to investigate the best way to develop self-management skills when working with older indigenous people.

3. A new integrated care model for the promotion of chronic care

After briefly going through the conceptual background, this section will introduce an integrated care model for the improvement in chronic care management of older Indigenous people in Taiwan. This model was developed and shaped up by multiple experiences, including working in indigenous communities and the literature from diverse disciplines. The care model comprises five important elements, which are effective information systems, home visiting schemes, health education, preventive care delivery and telehealth services plan. Figure 1 illustrates the integrated care model for the promotion of chronic care among older indigenous people.

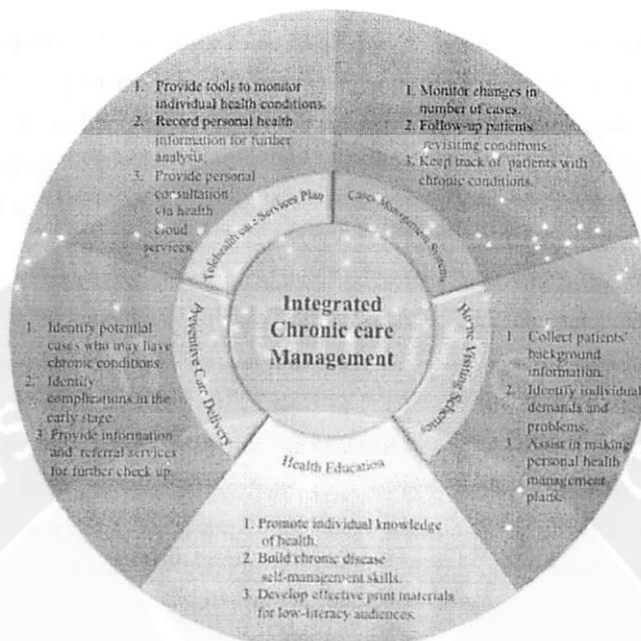


Figure 1. Integrated care model

3.1 Element 1- Case management information systems

The literature suggested that effective clinical information management systems are essential to chronic care and case management (Wanger et. al., 2001). Well-designed management systems allow health care professionals to track the patient medical history and identify problems and patterns that may help determine the methods of health care. The systems used in our hospital improve the functions of chronic care management for our patients. The functions include: facilitating the development of disease registries; following up revisiting patient with appointments; monitoring the progression of chronic disease in patients. This helps staff to gain a holistic view of the patients and directions for further health care.

3.2 Element 2- Home visiting schemes

High quality chronic disease care is characterized by productive interactions between health care professionals and patients that consistently provide the appraisals, support for self-management and follow-up associated with good outcomes (Wanger et. al., 2001). In addition, trusting relationship between health care professionals and patients is a crucial factor greatly affecting patients' implementation of their chronic care management. Home visiting schemes actually give health care professionals the opportunity to build relationships with patients and to collect patients' background information. Health care professionals can identify patients' lifestyle-related problems and specific demands via home visiting, and then help patients to build their confidence and skills in managing their chronic conditions. Most

importantly, health care professionals can help patients to develop personal health management plan based on their conditions to achieve a better health outcomes. Although the performance of home visiting is a time-consuming task, it brings certain benefits when staff implements chronic care management. Consequently, the vital component of home visiting scheme is necessarily brought into the integrated model.

3.3 Element 3-Health education

Patients cannot undertake daily self-management tasks if they have poor understanding of the disease process or medications used. The provision of health education to older indigenous people is an essential strategy to improve knowledge of chronic disease and how to manage them. In this integrated care model, health education plays an important role to raise awareness of health and develop appropriate health behaviors among older indigenous people. It hopes that two key goals can be achieved via implementation of health education. The goals are: first, older indigenous are sufficiently knowledgeable about their chronic conditions and its treatment to make rational decisions about their care. Secondly, older indigenous can perform activities aimed at management of their chronic conditions. Furthermore, varied health educational activities, such as individual health education, health seminars and patient support groups are applied to enhance self-management skills of chronic conditions among older indigenous people.

Additionally, producing effective health print materials is a vital part of health education. The production of health educational materials needs to follow principles, such as appropriate content and layout, right font size and readability (Bensley & Brookins-Fisher, 2003). Well-designed health print materials can significantly enhance patients' knowledge and change their health behavior, and thus achieving a better self-care (Paul & Redman, 1997). Thus, developing effective health print materials for audiences especially for low-literacy audiences is imperative when improving the process of chronic care delivery.

3.4 Element 4- Preventive care delivery

It is important to involve preventive care in the model of integrated care. As we know, chronic diseases are among the most common and expensive of all health problems; however, they can be reduced or onset prevented until much later in life. Provision of preventive care includes health promotion activities that encourage healthy living and limit the early onset of chronic diseases. It also comprises early detection efforts, such as screening for chronic disease in high-risk populations, as well as strategies for proper management of existing chronic diseases and related complications (Centers for Disease Control and Prevention, 2009). In other words, if chronic disease can be found in the early stage, there may be a chance for better control of disease, and thus reduce the burden of chronic conditions and its complications. However, we

found that many of our older indigenous patients did not have well-developed concepts of prevention as well as not thinking health as a priority at present lives. There is a need to develop the concept of early detection and treatment for the older indigenous communities via the delivery of preventive care.

3.5 Element 5- Telehealth services plan

Effective integrated chronic care requires design that encourages patients to actively engage their health care at any place and time. Although Integrated Delivery System programs improve accessibility and convenience of health care to older indigenous people living in remote mountain areas, provision of continued and complete care is still a problem. In order to improve this condition, we incorporate with telehealth center to provide home telehealth care services for patients. Telehealth is the remote exchange of data between a patient at home and their health care services. It helps patients to better understand their health conditions by providing medical apparatus for self monitoring, encourage better self management of long-term health conditions, and alert professional support if devices signal a problem (Steventon et al., 2012). Through the telehealth, patient can receive a continued care at home, and professionals can have a more comprehensive health record of individual patient. This will also help health care professionals to design appropriate and complete chronic care plans for their patients.

Research has also shown that telehealth can have a positive influence on patients with chronic disease, such as improved patient experiences, quality of life and further reduction in emergency admission rates (McLean, Protti & Sheikh, 2011). Our working findings also have shown that most of our diabetes patients using telehealth services experience improvement in HbA1c levels. For these reasons, the key element of telehealth services should be involved in the integrated care model to promote better chronic care among older indigenes in the remote mountain communities.

4. Conclusions

This article describes a clear integrated model for promote chronic care among older indigenes with chronic conditions and illustrates essential elements need to be involved in the model. The model also provides a holistic concept of chronic care management and a method for health promotion through the application of key elements. The model can also be a guideline to apply in the design of health promotion project for older indigenous people living in the remote mountain areas.

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Human Trafficking in Thailand: The Major ASEAN Development Crisis

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Abstract

Thailand has long been a destination for labor migrants from neighboring Cambodia, Lao PDR and Myanmar for decades. There are about three million migrants labors working in a so called three Ds (Dirty, Dangerous and Demeaning) jobs. Numerous men, women, and children working in the three Ds have been subjected to force labor and sexual exploitation in various types of industry including sex industry, fishing, manufacturing and agricultural industries. Without the State's concerning about the severity of human trafficking, Thailand might not be able to achieve its development goal.

This article outlines the human trafficking as a result of the migration of minority groups from Myanmar. The fighting between Burmese military and ethnic groups has led to the continuity migration of Burmese ethnic minority to Thailand. Mae La temporary shelter in Thasongyang district, Tak province is one of the most crowded Shelters for the displaced person from fighting (DPF). The most crucial obstacle is the operation of the Shelter which is under an agreement between international organizations (The UN Refugee Agency Thailand/UNHCR) and the government of Thailand. However, unclear strategic policy of the Shelter lead to poor socio-physical conditions, problems of socio-economic dependency, escaping from the Shelter, and problems of human trafficking. To seek for better living conditions, some DPFs sneak out the Shelter searching for jobs. Luckily some may be able to find a job in the three Ds. Unfortunately, many are ended up being betrayal and became victims of human trafficking.

The author adopted a mixed methodology including quantitative and qualitative research. Sample groups were systematically selected before a questionnaire was applied. Key informants were purposively selected. In-depth interviews were later conducted individually. The situation and socio-cultural context were exhibited using social geographic information system (SGIS). The results showed: DPFs in the Shelter have been trafficked because of 5 major factors: 1) low quality of life from the Shelter's poor management and its resources scarcity; 2) poverty and consumerism in Thailand; 3) ignorance of the state policy concerning human right and equity; 4) Thailand's obsolete law and regulation about human trafficking; and 5) vulnerable status of DPFs as "stateless" people. The author suggested that to prevent

the increasing numbers of human trafficking victims, it is crucial to reconsider the existence of the Shelter's management system, redefinition of the "temporary" status of the Shelter. The author outlined that the DPFs should be reconsidered as global citizens who have the right to live with dignity and pride. To achieve Thailand's development goal, empowerment programs for increasing the DPFs' three skills are crucial. These include language skill, socio-cultural skill, and working skill. Moreover, an improving standard of living among DPFs should be a priority.

Keywords: Human trafficking, DPF (Displaced Person from Fighting)

1. Introduction

The collapse of the Soviet Union in 1991 has transformed the entire world political situation. The change leads to a complete reformulation of political, socio-economic and military alliances all over the globe. Although the ascension of the United States allowed the nation to be the only dominant world superpower, the global transition into a state of multi-polarity has given ways to others source of power. These include China, others New Industrial Countries (NICs), and the emergence of ASEAN. However, the regional social crisis rooted from poor planning of the ASEAN members, for example, the state's ignorance of socio-cultural factors and maltreatment of human trafficking create the major obstacle to bring them to sustainable development.

Thailand has long been a destination for labor migrants from neighboring Cambodia, Lao PDR and Myanmar for decades. There are about three million migrants labors both legally and illegally working in a so called three Ds (Dirty, Dangerous and Demeaning) jobs. Numerous men, women, and children of these forced labors have been subjected to forced labor. Various types of sexual exploitation and dehumanization on human industry include sex industry, fishing, manufacturing and agricultural industries are common. Without concerning the critical situation of Thailand's human trafficking, the ASEAN might not be able to achieve its goal.

Currently, Thailand has nine Temporary Shelters. The Shelters are temporarily established for individuals who impact from fighting in Myanmar. Four of the Shelters are in Maehongson province, three shelters are in Tak province, and the others two are in Rachaburee and Kanchanaburee province. Among these Shelters, Mae La Temporary shelter in Tha Song Yang District, Tak province is the biggest shelter. The Shelter confronts complicated socio-cultural problems. Furthermore, the Shelter's unique characteristic brings lots of socio-economic and cultural problems. These characteristics include 1) its vastest area of 1,150 Rai; 2) its biggest number of resident as in 8,449 households with 45,669 individuals

compose of 22,783 who were registered and 22,886 new arrival persons (Mae La Temporary Shelter, 2012, Funtragulchai, P., 2012); 3) its highest density of resident, of 1 person per 1 sq.m; 4) its highest density of surrounding local community within 10 kilometers radius; 7 villages or 4,920 residents (Mae Ra Mad District Office and Tha Song Yang District Office, 2010); and 5) its greatest socio-economic impacts on local communities including ethnic diversity, natural resources degradation, environmental problems, and criminal problems; 6) its much involving in problems of dehumanization and human trafficking (Kijvirojkul, M., 2008; Bandan Buadaeng and Patcharin Sirasoonthorn, 2013, Patcharin Sirasoonthorn and Bandan Buadaeng, 2015).

To identify the social problems, the authors started a preliminary study during 2012-2013. The study found that the displaced person from fighting (DPF) have long confronting low quality living, limited human right and facing problems of dehumanization. The problems rooted within the process of dividing duties, multi transferring checkpoints, and state's corrupted system (Buadaeng and Sirasoonthorn, 2012; Buadaeng and Siripornpaiboon, 2013). In 2015, the authors reinvestigate deeper about the problems of human right exploitation and human trafficking. The result shows significant evidences on the similar problems. Nonetheless, the degree of violation and exploitation are continually increasing. Moreover, problems are not limited to those who are living inside the Shelter or surrounding village communities, but also influenced quality of life of urban residents and those involving the DPFs. Symbolic violence as well as socio-cultural problems in the inner city and others estate areas such as Bangkok, Samutsakhon, Samutsongkharn, Ayuttaya are commonly found. Problems include life threatening to illegal foreign workers, physical and physiological abused, and dehumanization (Buadaeng and Siripornpaiboon, 2015; Patcharin and Buadaeng 2015).

In sum, the problem of human trafficking in Mae La Temporary shelter has been increasing each year. The negative impacts are not limited to the DPFs who becoming trapped victims in the Shelter, but also those who are able to sneak out. The DPFs who are living outside the Shelter become vulnerable stateless people. They are physical, psychological and socio-cultural abused. The root causes start from Shelter's operation under agreement and conditions between international organization supporting consumables namely United Nations High Commissioner for Refugees (UNHCR) and Thai Burma Border Consortium (TBBC), and the state of Thailand through office of Secretary of Ministry of Interior has given special characteristic to the policy. There are exclusive regulations enforced only in the Shelter while outsiders cannot enter the areas freely as might be otherwise within the state of Thailand unless formally permitted by office of the secretary to Ministry of Interior.

Therefore, activities and information both within and about the Shelter released to the public are extremely limited.

As a result, it's very difficult to find out information concerning individual victims of human trafficking in the Shelter where is special area which is characterized by closed societies, hard to approach and were tied to policy over Thai state. Therefore, this article reveals the rarest situation and problems of human trafficking process and life of the victims in the "grey area" which really hard to enter.

2. Method

Mixed methods are employed. These include:

2.1 Quantitative research: The authors investigated inside the Shelter by using questionnaire searching for overall information concerning quality of life of DPFs. The application for data collection was submitted to the Chief District Officer before studying (at present the application must be submitted to Ministry of Interior only). By applying stratified random sampling, the residential zones were divided into 3 strata, with 28,922 labor-age residents of 15 years and older (Mae La temporary shelter, February 2012). Once obtaining the Shelter's permission, the authors conducted survey from 430 samples. Sample groups consisted of 105 individuals from "zone A", 135 individuals from "zone B" and 190 individuals from "zone C". The data was individually collected from each sample both directly and through interpreter. Data analysis included frequency and percentage.

2.2 Qualitative research: To identify victims of human trafficking, 9 key informants were selected from the questionnaires. Triangulation method was applied to process the data before analysis under four objectives: 1) to ascertain validity; 2) to reduce bias; 3) to confirm the data and; 4) to elaborate the data (Yoddamnern-Attig, B. and Tangcholtip, K., 2009). Furthermore, internal socio-cultural context of the Shelter was investigated by developing Geographic Social Information Mapping (GSIM). The data was finally analyzed by using content analysis and narrative method.

3. Results

3.1 Quality of life

TABLE 1 : Health condition and Seeking Behaviors

Diseases and treatment	Frequency (person)	Frequency (%)
1.Chronic diseases		
Chronic diseases	72	16.7
Non-Chronic diseases	358	83.3
Total	430	100
2. Treatment when sick		
In the Shelter	53	73.6
Outside the Shelter	9	12.5
No treatment	10	13.9
Total	72	100

TABLE 2 : Quality of food (answering more than one choice)

Sources of food	Frequency (person)	Frequency (%)
Received from the Shelter	430	100
Self- Produced	44	10.2
Buying from vendors inside the Shelter	409	95.1

Results (Table 1-2) showed the DPFs health conditions, health seeking behaviors and sources of food supply. Qualitatively, the Shelter's public health services and resources were pull factors. In order to received free facilities and health-care-services inside the Shelter, more friends and neighbors from Myanmar illegally sneaked in the Shelter occasionally.

TABLE 3 : Quality of housing

Security and density of housing	Frequency (person)	Frequency (%)
1.Security of housing (based on construction materials)		
Concrete	4	0.9
Wood	14	3.3
Bamboo	412	95.8
Total	430	100
2. Density outside the houses		
Less than 5 meters from next house	412	95.8
5-10 meters from next house	10	2.3
10-15 meters from next house	5	1.2
more than 15 meters from next house	3	0.7
Total	430	100

TABLE 4 : Annual income

Annual income	Frequency (person)	Frequency (%)
1.Household income		
Get income	158	36.7
No income	272	63.3
Total	430	100
2.Level of income		
Enough for spending	39	24.2
Un-enough for spending	122	75.8
Total	161	100

The declining quality of life for DPFs was found in terms of insecurity housing, crowded, and insufficient personal space (Table 3). Moreover, insufficient income, and poverty because of unemployment under oppression from the Shelter's regulations were common (Table 4). Though some may have income from taking small jobs inside and outside the Shelter, it was

not enough to meet the cost of living. Being unable to solve the poverty, the DPFs sneaked out the Shelter searching for small jobs in surrounding villages and the state’s inner area, such as Bangkok and Samut Sakorn. Consequently, U.S. \$ 1-2 per day was the common payment. This social phenomenon has caused some of the DPFs to be invaded, particularly those of civil rights, economic rights, social rights and culture rights due to their status as alienation, language and race differences, and a cultural margin in Thai society.

As a result, these DPFs fail into the criteria of being human trafficked. They have been invaded some or other human rights from said work; found that there were at least 27 DPFs who are still not decipherable either they were trafficked or not (Table 5).

TABLE 5: Invasion of human rights

Invasion of Human Rights	Frequency (person)	Frequency (%)
1. During working		
had been invaded	27	25.7
hadn't been invaded	78	74.3
Total	105	100
2. Type of Invasions		
survival rights	4	14.8
Safety rights	4	14.8
Social rights	6	22.2
Culture rights	1	3.7
Economic rights	17	63.0
Other rights	12	44.4

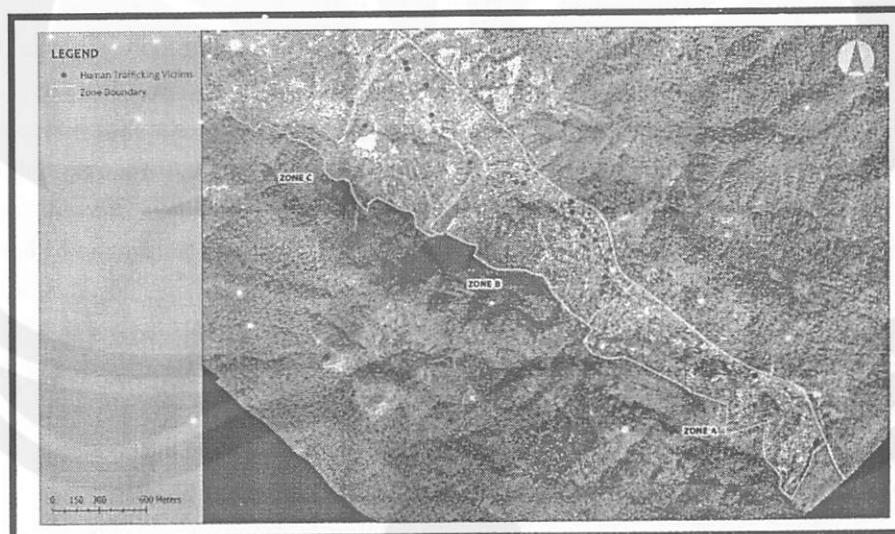
The above tables reveal that there were 27 individuals who experienced human trafficking. By adopting framework of Thai law (Human trafficking prevention and suppression Act, B.E. 2551), 14 individuals were in-depth interviewed. Only 9 DPFs were defined by law as the victims of human trafficking.

3.2 Socio-cultural Context

By exploring the Shelter on foot, the authors were able to create Geographic Social Information Mapping /GSIM). The Map revealed social phenomenon and the Shelter's poor designation. All social and cultural facilities such as learning centers, health services, and temples/church inside the Shelter are scattered. This leads to limitations of DPFs to reach the facilities and information. Moreover, the basic commodities necessary to better living such as clean water, public telephone, broadcasting tower, and career training centre are clustered together specially on the flat plain near to the road and entrance of the Shelter.

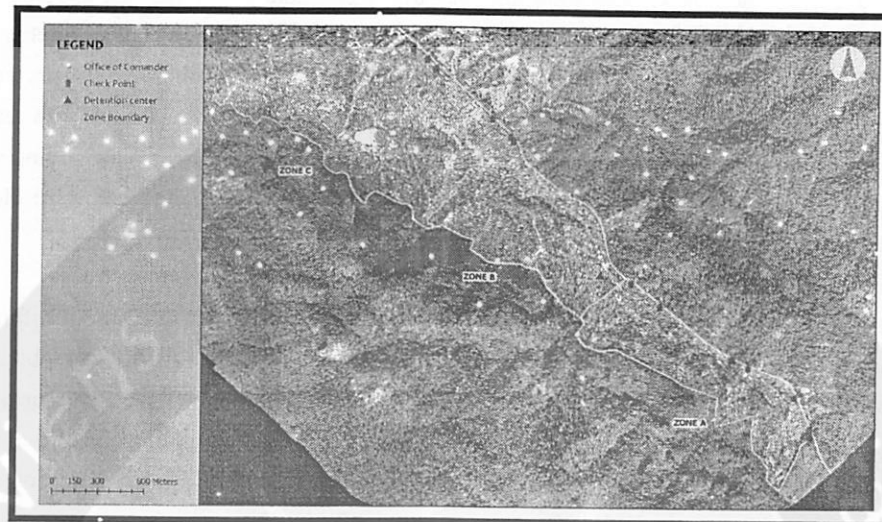
Consequently, further sites and highlands residents were left behind. Lacking of information or having difficulties reaching said commodities, these marginal residents become blind from social and cultural changes. On the other hand, the Shelter's administrative area especially 13 check points—the reason for such low number being the geographical restriction and personnel shortage—at the entrance, which is as wide as 3.17 kilometers, are not enough compare to number of the DPFs. (Buadaeng, B et.al., 2013) (Figure 1)

Figure 1: Socio-cultural Context in the Shelter on GSIM



Although the flat areas near to the entrance have enough commodity systems and the nearby resident can conveniently reach public commodities, home of those who had been trafficked are all located near the entrance areas. This result confirmed that not only the factor of low quality of life that increase human trafficking among DPFs, but also other policy factors especially the flexible rules of the check point which increasing opportunity and convenience to communicate with outsiders (Figure 2).

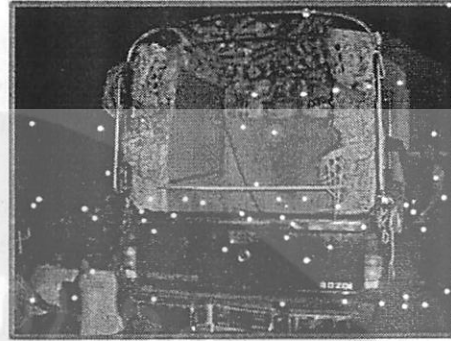
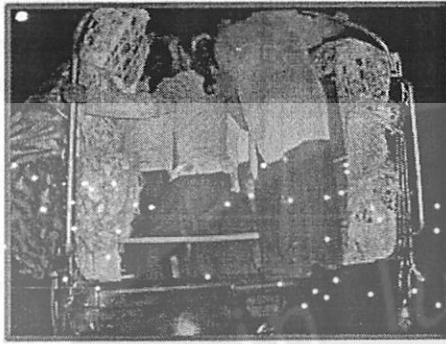
Figure 2: Position of victims' house



3.3 Human exploitation and transferring

Under Thai's Law, punishment will be given to the human traffickers only when the human trafficking process has been completed. This means that all the victims have been sold at the final destination with evidence based. Therefore, all kinds of life exploitation, physical and physiological abused, as well as dehumanization during transportations are considered merely illegal transport. Although number of death and injured during the transportations are increasing each year, the human traffickers are normally face minimum punishment. Types of brutal human transportation in lower northern part of Thailand include 1) crowd hidden in small cars, trucks, buses and cargo trucks, 2) hidden identity by using false identification document, 3) long distance by foot on the maintain range, and 4) being poisoned by using drug or other seductive medicines. As a result, lots of DPFs were killed or severe injured during the transportation process.

Picture 1: Exploitation and dehumanization during transportation



4. Discussion and Conclusion

4.1 Discussion

4.1.1 The low quality of life suffered by DPFs is one of a major factors leading to escaping and becoming the victims of human traffickers. Moreover, the complication of the Shelter's management makes it becoming a special area under conditions and agreements of several organizations. These include international organizations (UNHCR) and numbers of the state's organizations of Thailand. Indeed, this establishment was designed to be the 'temporary' to support basic human rights of the DPFs. However, adding to the fact that Thailand has not signed the 1951 Convention relating to the Status of Refugees (CRSR), making supporting the DPFs not bound by the convention and thus proceeded based on human rights principle, leading them to obtain 'temporarily' status. As a result, many DPFs have to live in the Shelter for more than ten years under this term. This situation causes social problems especially the long term low quality of life bound by the concept of being temporary. This finally pushes the DPFs who look for a better quality of life sneak out the Shelter, and inexplicably leading them into the human trafficking process.

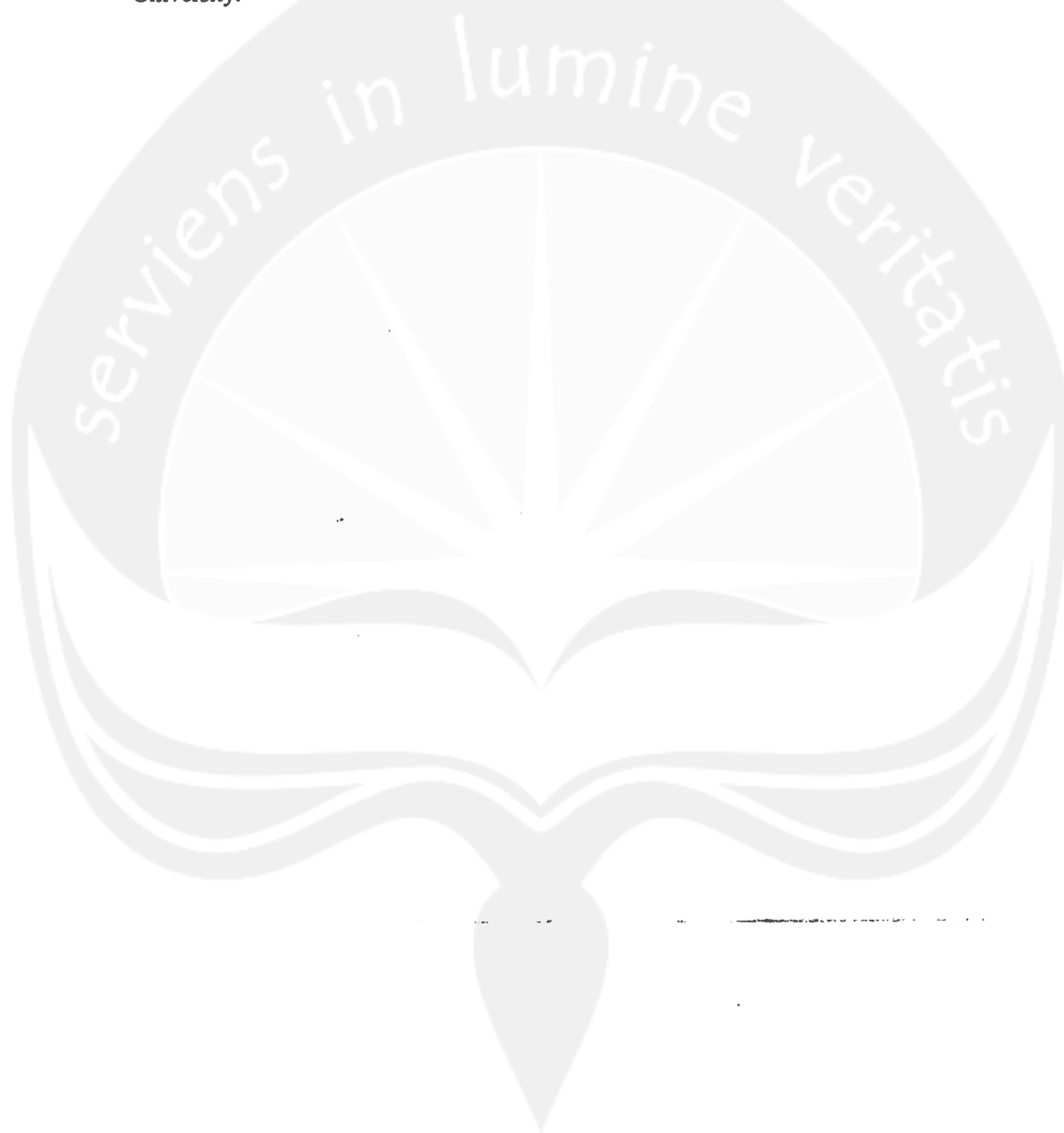
4.1.2 Nine victims have expressed their experiences being both physical and psychological abused during the transportation process. All of them have ended up doing those three Ds (Dirty, Dangerous and Demeaning) jobs. Unable to communicate in Thai, nor having no social safety nets, these DPFs have been continually exploited. They were forced to become prostitutes, cheap labors, buried alive or throwing into the sea after the job has done. However, they are too scared to give up their jobs and returning their homeland in Myanmar. As the human traffickers have a strong connection to their neighbors or friends in Myanmar. Some of the traffickers are even their close friends or coming from the same ethnic tribe. Without strategic long term plan or the state's strong sense of human right, the problems of human trafficking are common.

4.2 Conclusion: Displaced persons from fighting persons (DPFs) in Mae La temporary shelter are the powerful example of how unclear social policy can influence the quality of life of individuals, especially the stateless people. In regard to basic minimum needs such as health, food, housing and sufficient income; this article intend to highlight that lost of these “global citizens” are left in desperation. In fact, it is not only the poor management and unclear policy planning of involving organizations; but also social attitude of Thai government concerning human right as well as problems of human trafficking. Their livings in the “grey area” make information about the DPFs are kept mysterious. Furthermore, ignorance of the state policy towards dehumanization occurring among these stateless people allows obsolete law and regulation concerning human trafficking existed. The authors strongly recommend that three major factors needed to be reconsidered: 1) the Shelter’s management and long term plan concerning quality of life of the DPFs, 2) changing in Thai laws about illegal transportation among DPFs or refugees as a part of human trafficking process, and 3) empowering these DPFs in terms of language, socio-economic and cultural skills.

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Leisure Time Activities and Youth Risk Behavior: The Role of Social Context

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ABSTRACT

Youth risk behaviors are those that can have adverse effects on the overall development and well-being of youth, or that might prevent them from future successes. This includes behaviors that can cause immediate physical injury, as well as behaviors with cumulative negative effects. Risk behaviors also can affect youth by disrupting their normal development or prevent them from participating in typical experiences for their age group. Because of youth risk behaviors can significantly impact the lives of youth and those around them, it is essential that social influences, and leisure time activities and other concerned environments become aware of the prevalence of these behaviors.

The goal of this study was to understand better how the social environments and context of youth leisure time activities relates to youth risk behaviors. Recently there was still lack of studies that investigated in studying the leisure time use among youth and its relationship to delinquency despite of leisure time activities occupies of an adolescent's life and either risk behaviors probably occurs most often during leisure time. Studies that were made on youth in Malaysia were limited on economic factors, education factors, and family variables. In contrast, this study was to determine whether or not the leisure time activities in which youth engage in have an effect on their risk behavior activities. Another major focus reflected on the gap in the literature exploring the differences between youth at normal school and youth at risk behavior in juvenile school.

Keyword: Youth, risk behavior, leisure time activities.

1. INTRODUCTION

Understanding young children's behavior towards leisure time activities is important and should be taken into consideration in society as well as in practice. By knowing what young

children think and how they spend their leisure time, adults; especially parents, teachers and coaches can understand these young children's emotions, needs, interests and behaviors much better. This could probably offer a more meaningful leisure time experience to the children by guiding and providing materials that are significant to their physical activity. However, it is a question of how far adults are influencing to children's leisure time and decrease a number of youth involved in risk behavior. Risk behavior is any behavior that impedes successful adolescent development and that may compromise a sense of competency, skill development, or the acquisition of socially approved roles (Baldwin, 2000).

1.1 Background

The risk behaviors are not only problems in the present but may interact to send a young person on a path of increasing personal and social difficulties. In a report by Mahoney & Stattin (2000), Osgood et al. (1996) claimed that adolescent activity involvement may decrease risk behavior and related outcomes. Rationales for why leisure activities may reduce risk behavior include: structuring the youth's time, providing links to competent adults and peers, building existing skills and interest, and creating opportunities within the social system where children feel competent and accepted.

The majority of an adolescents' waking time is spent engaged in leisure activities (Csikszentmihalyi et al., 1993). There are many possible ways that leisure time is consumed, ranging from highly structured (e.g. competitive sport teams) to relatively unstructured pursuits (e.g. watching television). For many, much of this time is spent in either unstructured peer focused activities or in front of the television set. Both developmental sociologist and youth policy advocates have suggested that this leisure time physical activity could be better spent in ways (such as participating in high quality of competitive sport and community programs) that would both facilitate positive development and prevent the emergence of developmental problems among adolescents (Eccles & Gootman, 2002).

The goal of this study is to identify and evaluate characteristics of leisure time use and how adults influence young children for participation that may be associated with increases or decreases in adolescents risk behavior. We hypothesize that greater participation-in structured time-use of physical activity will be associated with less risk behaviors (delinquency, substance use, and sexual activity), in effect mitigating negative developmental outcomes that may result from greater participating in those behaviors.

1.2 The Social Context in Adolescent Leisure Time Activities

Adolescent's use of time is an issue of importance to youth, families and society as a whole because the amount of time spent in various activities has been linked to the development of

adolescents problem behaviors. Occupying time in constructive ways by participating in extra leisure time physical activities and doing homework, for example, is often viewed by parents and social groups' leaders as a means of preventing risky behaviors such as substance use and delinquency.

Adolescent time in use in shared family and peer experiences may also have profound influences on the development of problem behaviors. A large literature show that higher levels of family support and cohesion are associated with lower levels of adolescent's risk behaviors (Farrell and Barnes, 2000). On the other hand, some theorists see socio-demographic factors as occupying separate domains in the lives of adolescent. Thus, large amounts of unsupervised time spent with peers, "hanging out" at malls, may contribute to a variety of risky behaviors in adolescents (Osgood and Anderson, 2004).

Several features characterize highly structured youth leisure time physical activities. These features include; regular participation schedules, rule-guided engagement, direction by one or more adult activity leader, an emphasis on skill development that is continually increasing in complexity and challenge, activity performance that requires sustained active attention, and clear feedback performance (e.g. Csikszentmihalyi, 1990; Mahoney, 2000). As the participant becomes more skilled, the structured demands of the activity increase in parallel (e.g. greater competition: increasing challenges or requirements).

The social context of leisure time activities includes social agents present during the activity and persons who influence participation. Structured leisure activities are often of higher social complexity and may involve peer cooperation, support from family members, and guidance from unrelated adults (e.g. coaches). Mahoney and Magnusson, 2000 have emphasized the importance of social support from non-deviant peers, family members and other adults as possible mechanisms by which structured leisure activities may benefit participating youth. For instance, structured clubs and teams attract youth of varying social and academic competence. For adolescents with marginal or low competence, participating in the activity provides an opportunity to form relationships with more competent peers that may otherwise be unavailable.

Recently, many problem-oriented which involve risk behavior among adolescent such as bully cases, vandalism, substance use, sexual activity, boredom and use cigarettes among adolescent. Problem-oriented which arise because many youth inclined to do which matter negative. There is a growing interest in the developmental consequences of leisure time activity participation, spurred in part by (a) high levels of alienation and boredom reported by youths in school, and (b) evidence of increases in the amount of time youths spend

unsupervised by adults (Eccles & Gootman, 2002). A growing number of children and youth are becoming involved in antisocial behavior (Conduct Problems Prevention research Group, 2002). The disruptive effects of these behaviors not only result in negative consequences, but also threaten the schooling process for all students.

Preventive strategies are needed to help overcome these problems (Meyers & Nastasi, 1999). This study will investigate the structured time-use of leisure activity and social influences towards prevent risk behavior among adolescent.

1.3 The Literature Review

Research has been done by (Rutten, Stams, Biesta, Schuengel, Dirks & Hoeksma, 2007) to investigate the contribution of organized youth sport to risk behaviour in adolescent. Thus it is important to study to what extent and how participation in leisure time activity exerts an influence on young people's behavior. The research is measures when the participants completed questionnaires on social desirability, risk behavior, socio moral reasoning about sport dilemmas, and interpretation. The results suggest that coaches who maintain good relationships with their athletes reduce risk behavior, and that exposure to relatively high levels of socio moral reasoning within the immediate context of sporting activities promotes prosocial behavior. Finally, the conclusion that the context of organized youth sport contains moral and relational factors that are relevant to understanding sport's contribution to adaptive behavioral development of young sportsmen and sportswomen.

Others, research has been done by (Taliaferro, Rienzo, Miller, Pigg and Dodd, 2008) for the objective it that sport may represent a promising protective factor against adolescent suicide. This study examined the relative risk of hopelessness and suicidality associated with physical activity and sport participation. Logistic regression modeling was used to compare the odds of hopelessness and suicidality in students who engaged in various levels of physical activity to inactive students. Findings showed that frequent, vigorous activity reduced the risk of hopelessness and suicidality among male adolescent. However, low level of activity actually increased the risk of feeling hopeless among young females. Yet, for both males and females, sport participation protected against hopelessness and suicidality. Finding suggests that mechanisms other than physical activity contribute to the protective association between sport and reduced suicidality. Social support and integration may account for some of the differences found in suicidality between athletes and non-athletes.

Next, research had been done (Barnes, Hoffman, Welte, Farrell and Dintcheff, 2007) which investigates the using an integration of social control their and the routine activity perspective, adolescent time use was examined for effects on problem behaviors. This research use sample

of adolescents (n=606) and took into account important socio-demographic factors-gender, age, and race groups using ANOVA. Correlations among all study variables were also computed. In order to assess the potential predictive effect of adolescent time use on behavioral outcomes, separate regression analyses were performed for each of the five dependent variables.

The findings show that while single time use variables predict selected problem behaviors, family time and peer time are the most consistent predictors of all problem behaviors. Although adolescents spends considerably more time with peers than with parents, family time still plays an important role in preventing problem behaviors. Conclusion, although adolescents spend considerably more time with peers than with parents, family time still plays an important role in preventing problem behaviors. No evidence was found, however, for a buffering effect of family time on the positive associations between unsupervised peer time and problem behaviors.

Research has been done by (Deborah J Rhea, Christopher D Lantz, 2004) to of this study was to explore the relationship between sports participation and self-reported violent, delinquent and aggressive behaviors in rural high school populations. The researcher administrated the questionnaires to the athletes either after school before athletic practices began or during physical education classes. Determine differences with direct aggressive acts, an analysis of variance (ANOVA) were calculated based on the continuous nature of the variable. Then, research is measures when the results indicated that males demonstrated similar violent and delinquent behaviors to other urban and suburban population.

Then, male non-athletes reported significantly more assaults, trouble at school, drinking while driving, trouble with the police, and marijuana use than male athletes and female athletes reported significantly less and male athletes reported significantly more aggressive behaviors than their non-athlete. Finally, the conclusion that the results from this study suggest that sports participation for males in rural populations has similar associations with problem behaviors as other studies have reported from urban and suburban populations. These data illustrate that violent, delinquent and aggressive behaviors do exist in rural populations, but that sport participation does not necessarily influence higher rates of these behaviors.

Research has been done by (Caldwell, Balwin, Walls and Smith, 2004). For the objective it that understand the role leisure plays in adolescent development because leisure is a 'key context for education and learning, for health care and the decisions that impact young people's health and a number of researchers have argued that leisure engagements have the

potential to contribute to a youth successful transition into adulthood. Finally, the conclusion that the leisure education is a means for helping youth learn to actively and positively engage with their world. This study has lent support to the idea that youth can learn to take positive action and manage their free time in healthy ways. Results for main effects of gender and time are described.

Other than that, Research has been done by (Tebes, Feinn, Vanderploeg, Chinman, Shepard, Brabham, Genovese and Connell, 2007). This study examines the effectiveness of an after-school program delivered in urban settings on the prevention of adolescent substance use.

A total of 304 adolescents participated in the study 149 in the intervention group and 155 in a control group. Research is assessments of substance use attitudes and behaviors were conducted at program entry, program completion, and at the 1-year follow-up to program entry. Propensity scores were computed and entered in the analyses to control for any pre-test differences between intervention and control groups. The results demonstrate that adolescents receiving the intervention were significantly more likely to view drugs as harmful at program exit, and exhibited significantly lower increases in alcohol, marijuana, and any drug use one year after beginning the program. Finally, the conclusion that the positive youth development intervention developed for use in an urban after-school setting is effective in preventing adolescent substance use.

2. THE OUTCOMES OF LEISURE ON YOUTH DEVELOPMENT

The scientific research evidence shows that leisure activities provides youth with substantial physical, social and mental health gains and improve their well-being. Physically, they grow in leaps and bounds and start to appear like mature adults. Cognitively, their thinking becomes more sophisticated. Socially, youth relationships are renegotiated, and youths develop the capacity to form deep relationships with others. At the same time, the roles that they occupy in society also change. For these various conditions, the role of social context is important to remember that parents and society continue to be the most important relationship in their teen's lives. They need to guide the youths especially when they have their stressful and fragile time, and avoid making youths more susceptible to engaging in risky behaviors and be unable to weigh their risks and benefits.

2.1 The significance of the study on leisure time activities

2.1.1 Public Health

The significance of this study is great for the public health on determinant of physical activity of adolescent and for improving to design effective intervention at the individual and

community level. Public Health is to protecting and improving the health of communities through education, promotion of healthy lifestyles, and injury prevention. Public health professionals analyze the effect on health of genetics, personal choice and the environment in order to develop programs that protect the health of your family and community.

2.1.2 Individual

In addition, it will create awareness to the individual to become more alert to the surrounding environment and involve in physical activity to make better in their life. Is a complex behavior and is often difficult to describe. Other than that there are different level of leisure – time physical activity appear lowest among girls and women. Physical activity also can help maintain full functioning and independence among adolescence.

2.1.3 Information to the Society

This study provides information on whether specific environmental attributes are related to the adolescent. It means the society may know the benefits of physical activity for adolescent including the prevention and treatment of prevent delinquent that the problem of the behaviour. It examines effects of pro social behavior instruction occurring within a sport context on the pro social behavior of adolescent with disruptive behavior disorder (McKenney and Dattilo, 2001).

2.1.4 Implications for School Psychologists

Getting at-risk teens involved in a structured activity of their choice, under the influence of positive social networks and competent adults, may lead to demonstrate positive outcomes (including high self-esteem and life satisfaction, engagement with school, social competence, and improved school performance). However, if the leisure time physical activity does not include active supervision by one or more competent adults and involves a delinquent peer group, it is likely that participation will impede positive outcomes (Mahoney & Stattin, 2000).

2.2 The Social Outcomes

According to the literature, leisure time activities are not just a source of psychological and health benefits but also an important part of their socialization process, because they give adolescents the adequate opportunity to experience their immediate social environment and success peer relationship (Siegenthaler, 1997; Schwarzenegger et al, 2005).

Because socializing with peers is important for youth development, leisure time activities become an appropriate source to make new friends, maintain social networks, and to express their own interests and develop their relationships of intimacy in shared experiences (Kyle &

Chick, 2002; Schwarzenegger et al, 2005; Parr & Lashua, 2005), and to establish independence from adults (Kyle & Chick, 2002).

3. CONCLUSION

Youth is a unique period of the lifespan. It is full of changes and challenges, but also of growth and opportunities. They are particularly susceptible to at-risk behaviors so parents and society need to support youth as they go through this period. The risk-behaviors prevention must cover a wide range of issues that youths face in order to be most effective. The society especially parents must clearly express their expectations and try to help equip youth to assess risk, to have the self-esteem and forbearance to withstand external pressures that might attract them toward behaviors that lead the negative outcomes.

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Investigation of Attitude Towards the Elderly and Social Interaction Using Value and Lifestyle Segmentation: Approach Towards Intergenerational Society

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Abstract

The objective of this research was to study Bangkok population in term of their attitude towards the elderly and social interaction. The Bangkok population, aged 18-59, is segmented according to lifestyle and value factors. Quota sampling according to gender and age of 1,020 respondents was used. Data collection was conducted using a questionnaire with lifestyle, value, demographic, attitude towards the elderly, and social interaction. Lifestyle, value, and attitude towards the elderly structures were analyzed using the Principle Component Analysis, and resulted in seven lifestyle factors, five value factors, and seven attitude towards the elderly factors. Using the lifestyle and value factors coupled with demographic data, two-step cluster analysis was employed. Seven main clusters and 16 sub-groups were found. Analysis of attitude towards the elderly shows that six sub-groups have positive attitude and five sub-groups have negative attitude. Analysis of social interaction indicates that nine sub-groups have a high level of social interaction. Policies for attitude and social interaction enhancement should emphasize the sub-groups with a high level of social interaction but negative attitude, the sub-groups with a low level of social interaction but positive attitude and the sub-groups with a low level of social interaction and either negative or neutral attitude, respectively. In addition, attitude development and appropriate activities for each sub-group are suggested to promote harmonious intergenerational society.

Keyword: Attitude towards the Elderly, Social Interaction, Lifestyle Segmentation, Intergenerational Relationship, Intergenerational Society

1. Introduction

Thailand, ranked second after Singapore among Southeast Asian countries, is accelerating towards ageing society. In 2021, it will be the first time that the number of people older than 60 exceeds the number of children and Thailand will become a fully ageing society. Policy makers and academicians tried to understand societal changes under this phenomenon, in order to effectively promote a well-balanced life and security for the elderly.

Past research studied ageing society in several aspects. Policy makers had a tendency to focus on elderly's needs and quality of life to promote activities for the present elderly while some researchers paid attention to younger generations' preparation towards old age (Eiamkanchanalai et al., 2013). Other research emphasized attitude of people towards the elderly and their social interaction by investigating intergenerational relationship to promote understanding and good relations between the elderly and younger generations (Kite et al., 2005). However, research in this area studied only interaction between specific groups of people and the elderly, such as between children and the elderly in family (Gilbert and Ricketts, 2008; Lee, 2009; Lin and Bryant, 2009; Tice et al., 2010), between nurse or doctor and elderly patients (Ford and Sbordone, 1980; Gonçalves, 2009; King et al. 1992; Runkawatt et al., 2013) and in other service industry between service providers and the elderly customers (Chu and Chu, 2011). Few studies investigate general public's attitudes towards the elderly in the society and their interaction.

As the proportion of the elderly is increasing, interaction with the elderly in public is inevitable. Knowing the attitude of general public towards the elderly and magnitude of their present interaction will be valuable for public and private sectors to prepare for ageing society. Thus, this study gears to investigate the attitude of people towards the elderly and their social interaction, to explore misunderstandings among generations and to ultimately provide guidelines leading to a harmonious intergenerational society.

2. Literature Review

2.1 Attitude towards elderly and social interaction

Kite et al. (2005) suggested that there are three components of attitude towards the elderly. The first component is an evaluation that an individual has about individual characteristics of the elderly, such as personality. The evaluation component can be either positive or negative. The second component is age-related stereotype which is the overall perception linking to the elderly, such as sharpness of thinking, high level of knowledge and experience, physical capability, etc. The last component is behavior or behavioral intention. This component is how people perceive of their interaction with the elderly, such as intention to work together and intention to stay within the same household (Mosher-Ashley, 2000). In addition, Kite et

al. (2005) concluded that attitude towards the elderly would be varied among people with different age, education, and socio-economic factors.

The present study plans to evaluate attitude towards the elderly according to the first two components of the attitude proposed by Kite et al. (2005), and define the third component of attitude as social interaction.

2.2 Lifestyle and value segmentation

As mentioned earlier, previous research studies investigated the attitude towards elderly and social interaction within specific subjects, such as children and nurse, in the private settings. The fact that subjects of these studies are specific groups of populations, classification of these groups deemed unnecessary. However, this study attempts to explore this phenomenon in society at large, a method to separate population into groups to provide a more in-depth analysis is essential. Generally, social scientists tend to group population using only demographic data, such as age and gender. However, marketing and business practitioners prefer to segment population by using additional factors such as lifestyle and value systems. This technique reflects a better comprehension of the population groups.

Two methods for lifestyle and value segmentation are widely used. The first method is to measure lifestyle and value using people's activities (A), interests (I), and opinions (O) (Gonzalez and Bello 2002; Lawson 1991; Silverburg et al. 1996). The second one is to measure lifestyle and value based on people's value system (Value and lifestyles scale: VALs) (Rokeach 1973; Schwartz 1992). It is inconclusive that which method is more superior. Therefore, this research will combine both techniques to classify people into sub-groups and identify differences among these sub-groups in order to investigate type of attitudes each sub-group has towards the elderly and how they interact with the elderly.

3. Methodology

Unit of analysis for this study is Bangkok Metropolitan population aged 18-59. Sample size of 1,020 respondents was selected based on a quota sampling according to proportion of Bangkok population by gender and-age (Table 1). Data collection was conducted using a questionnaire with lifestyle, value, demographics, attitude towards the elderly, and social interaction variables. The 28 items of lifestyle measurement and 17 items of value measurement were derived from the authors' previous work (Eiamkanchanalai et al., 2013). The 28 items of attitude towards the elderly measurement was adapted from Rupp et al. (2005) and adjusted to fit with Thailand context using a focus group discussion with 15 respondents. The focus group yielded ten questions about social interaction.

Table 1: Construct of attitude towards the elderly factor

Age	Male	Female	Total
18-24	84	86	170
25-34	151	157	308
35-49	180	194	374
50-59	78	90	168
Total	493	527	1,020

4. Results, Discussions and Implications

First, the measurements of attitude toward the elderly, lifestyle, and value were analyzed using the principle component analysis to identify construct of the measurements. The results suggested that some items should be dropped from the analysis. The final constructs showed that the attitude towards the elderly consisted of seven factors (Table 2), the lifestyle measurement had seven factors (Table 3), and the value measurement had five factors (Table 4).

Table 2: Construct of attitude towards the elderly measurement

	Number of items	Average scores	Rotation sums of squared loadings	% of variance	Cronbach's alpha
Aversion to Elderly	4	2.335	3.062	13.920	.811
Inability to Accept Change	4	3.363	2.036	9.254	.671
Unhygienic & Untrustworthy	3	2.793	1.918	8.718	.620
Interesting & Knowledgeable	4	3.670	1.917	8.715	.624
Secluded & Living in the Past	3	3.627	1.829	8.312	.676
Separated	2	2.080	1.412	6.418	.679
Remained with Same Age Group	2	3.540	1.275	5.797	.441
Total	22		13.449	61.133	.800

Table 3: Construct of lifestyle measurement

	Number of items	Average scores	Rotation sums of squared loadings	% of variance	Cronbach's alpha
Fashion and Party Conscious	7	2.972	3.205	11.871	0.770
Price Comparison and Concern	4	3.396	2.319	8.590	0.670
Leadership Oriented	5	3.356	2.25	8.333	0.671
Fast Pace Living	3	2.398	2.158	7.992	0.731
Community Concern	4	3.261	1.781	6.598	0.539
Immediate Member Concern	2	4.183	1.524	5.644	0.519
Weight Concern	2	3.067	1.464	5.422	0.559
Total	27		13.449	61.133	0.800

Table 4: Construct of value measurement

	Number of items	Average scores	Rotation sums of squared loadings	% of variance	Cronbach's alpha
Saving for Future	3	3.566	1.947	11.455	0.591
Planning for Better Future Quality of Live	4	4.065	1.927	11.337	0.654
Compromise	4	4.000	1.843	10.344	0.614
Regulatory Compliance	2	3.924	1.813	10.665	0.703
Independence	4	3.569	1.700	10.002	0.545
Total	17		9.231	54.302	0.765

Then, the resulted lifestyle factors, value factors, and demographics factors were applied into two-step cluster analysis. All 1,020 respondents were classified into seven groups and 16 sub-groups. The sub-groups can be named according to their gender, career, and age as shown in Table 6.

Table 5: Social interaction measurement

	Mean
Satisfied with elderly in family	4.29
Satisfied with elderly in workplace	3.57
Satisfied with elderly in society	3.38
Willing to donate for elderly related activities	3.77
Willing to pay tax that support elderly' living condition	3.77
Willing to help elderly when meet	4.22
Willing to sacrifice time to help elderly activities	3.57
Willing to work with the elderly	3.79
Willing to live within the same household with the elderly	4.03
Willing to do career that have elderly as customer	3.98

Table 6: Attitude toward the elderly and social interaction classified by sub-groups

		Attitude towards elderly			Social interaction	
		Negative	Neutral	Positive	Low	High
1. College student	Male college student	X			X	
	Female college student	X				X
2. Female office worker	Female office worker experienced 3-5 years			X		X
	Female office worker experienced 6-10 years			X		X
	Female middle manager		X		X	
	Female executive			X		X
	Female senior office worker			X		X
3. Male worker & company owner	Male blue collar & clerk		X		X	
	Male office worker			X	X	
	Male executive & company owner			X		X
4. Informal worker	Middle age trader		X			X
	Senior trader & freelance	X				X
	Housewife & female street vendor	X			X	
5. First jobber		X				X
6. Fast track young manager				X	X	
7. Company support staff & government officer				X	X	

Table 6 shows type of attitude towards the elderly and their social interaction for each sub-group. There are three types of attitude toward the elderly - positive, negative, and

neutral. Based on the seven factors of attitude towards the elderly, a sub-group that has more positive factors is referred as having a positive attitude. On the other hand, a sub-group that has more negative factors is categorized as having a negative attitude. And a sub-group that has equal numbers of positive and negative factors is referred as having a neutral attitude.

In addition, social interaction measurement consisted of ten items (Table 5). Nearly all of the sub-groups scored high in three items--satisfied with the elderly in family, willing to help the elderly when encounter, and willing to live within the same household with the elderly. Those sub-groups with high scores on these three items but low scores on the remaining items were regarded as having a low level of social interaction. Moreover, those with high scores in at least four items were referred as having a high level of social interaction.

The relationships between type of attitude towards the elderly and level of social interaction are summarized in six patterns as shown in Table 7.

Table 7: Relationships between type of attitude towards the elderly and level of social interaction

		Social interaction	
		Low	High
Attitude towards elderly	Negative	<ul style="list-style-type: none"> Male college student Housewife & female street vendor 	<ul style="list-style-type: none"> Female college student Senior trader & freelance First jobber
	Neutral	<ul style="list-style-type: none"> Female middle manager Male blue collar & clerk 	<ul style="list-style-type: none"> Middle age trader
	Positives	<ul style="list-style-type: none"> Male office worker Fast track young manager Company support staff & government officer 	<ul style="list-style-type: none"> Female office worker experienced 3-5 years Female office worker experienced 6-10 years Female executive Female senior office worker Male executive & company owner

From Table 7, sub-groups with negative attitude towards the elderly but having a high level of social interaction are considered crucial. The more interaction they have, the higher the tendency their attitudes can deteriorate. These sub-groups are female college students, senior traders & freelancers and first jobbers. They might not have a high level of social interaction with the elderly voluntarily but rather were bound by their social duty and obligations to perform tasks for the elderly, such as living within the same household with the elderly and having the elderly as colleagues or co-workers. Educational programs and positive attitude enhancing activities should be carried out to promote a more pleasant social interaction for these sub-groups.

The second priority should focus on the sub-groups with positive attitude but having a low level of social interaction. These sub-groups are male office workers, fast-track young managers, and company support staff & government officers. These groups of people tend to devote time to self-interest and preoccupy themselves with work related activities. Thus, they tend to neglect to interact with other people including the elderly. Nonetheless, their attitudes towards the elderly are positive, a healthy social interaction among these people and the elderly is achievable. Promotion of the elderly as resourceful persons or business mentors can lead to a successful social interaction among these groups of people.

The third priority should aim at the sub-groups with either negative or neutral attitude and having a low level of social interaction. As both attitude and social interaction are well below other sub-groups, fundamental information regarding the elderly and ageing society should be disseminated towards these groups. General social interaction through cultural participation should be employed.

The last priority should emphasize the elderly as societal attitudes towards them are generally reactions stemming from people's direct experience with the individual elderly's behavior. In this current research, four undesirable characteristics – isolation and living in the past, being unable to adapt to changes, having poor hygiene and untrustworthy, and being uninteresting and lacking of knowledge - of the elderly are found. Given these negative attitudes, it is most likely to contribute to a low level of social interaction. As a result, educational programs for the elderly of how to adapt to changes, what society expects of them and how to be desirable active ageing should be implemented. A program to promote how to utilize mobile and communication devices should be introduced in the initial stage so that the elderly can continue to be connected with families and friends. Other educational programs and intergenerational activities through elementary schools should be carried out in the later stage.

5. Conclusions

This study aims at promoting a harmonious intergenerational society by investigating population attitude towards the elderly and their social interaction in the society. The study extends the past research where intergenerational relations and family relationship are the main focus.

Moreover, this research analyzed population from a marketing perspective by employing the concepts of lifestyle, value and demographic data to cluster samples into sub-groups. Each sub-group profile provides a better insight of how its attitude towards the elderly and social

interaction is formed. With this understanding, appropriate social activities, educational and attitude enhancement programs can be designed effectively for each sub-group.

This study, however, focused only in Bangkok Metropolitan area. Its generalization is limited. Further study and replication in different geographical areas are needed. As the elderly themselves are also adjusting to the sudden shift towards ageing society, the well-informed elderly in the future may differ from the present group. Thus, future attitudes towards the elderly and their social interaction are most likely different. With keen awareness among all sub-groups in the society, a sustainable harmonious intergenerational society can be accomplished.

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**Legal Development of Child-Marriage in Indonesia: Between Permitted
and Prevented**

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ABSTRACT

Child-marriage law development in Indonesia characterized by contradiction between Act No.1 of 1974 and Act No.23 of 2002. The first Act allows child-marriage through the dispensation, while the second Act prevents it. How did the attitude of parents and judges deal with it?

Based on cases of child-marriage dispensation requested in the Religious Court and General Court of Wonosari, Indonesia, it turned out that the parents for the shake of their interest prefer marrying their pregnant children than preventing their children to marry. The attitude was supported by the judges who prefer granting dispensation on child-marriage than rejecting, in the consideration of local-cultural value, i.e covering up disgrace, as well as the interests of the fetus.

The development of child-marriage law in Indonesia leading to the prevention of child-marriage, then, was not effective in both certain situations and areas.

Keywords: child-marriage, contradictory of law, local cultural value

1. Introduction

Legal politic studies law that will be enforced in a country (Radli, in Hadisoepipto, 1993). The Indonesia' legal politic concerning with marriage law today can be seen in Act No.1 of 1974 on Marriage. Article 1 of Act No. 1 of 1974 stipulates that "Marriage is a physically and mentally bond between a man and a woman as husband and wife with the intention of forming a family or household that is happy and eternal based on God". The article establishes the notion and purpose of marriage. Prawirohamidjojo (1986) noted that marriage contains five elements, namely (a) bonding phisically and spiritually; (b) between a man and a woman; (c) as husband and wife; (d) the purpose of marriage is a happy and eternal family (household); (e) believe in The Almighty God.

People intending to get married must meet several requirements. Article 7, paragraph 1 of Act No. 1 of 1974 stipulates that the groom must be at least 19 years old and the bride must be at least 16 years old. It is required in order the brides, psychologically, ready to get married. It indicates that a man and a woman under the age limit mentally or psychologically is not ready yet to get married. However, Act No. 1 of 1974 provides dispensation for the brides who has not met the age requirement of 19 years and 16 years, as stipulated in Article 7 paragraph (2) of Act No. 1 of 1974. On the other hand, Article 26 paragraph (1) of Act No. 23 of 2002 on Protection of Children *clearly states* that parents are responsible to prevent child-marriage.

Dealing with the development of child-marriage law in Indonesia there is a contradiction between Article 7 (2) of Act No. 1 of 1974 and Article 26 paragraph (2) of Act No. 23 of 2002. In practice, many dispensations of child-marriage were filed by the parents (West Java BKKBN, 2009; Save the Children, 2010; Sudarwanto, 2013). Tomy Sudarwanto (2013) found out that in Wonosari Regency, Indonesia, the data of child-marriage dispensation were quite high (*see Figure 1*)

Kind of case	2010	2011	2012	Jan 2013
Child-marriage dispensation	113	145	170	17

Figure 1 Child-marriage Dispensation (Source: Tomy Sudarwanto'Research Finding, 2013).

The question is, what were the attitude of parents and jugdes concerning with the development of child marriage policy? The study of the attitude of the judges and the parents was based on research *conducted* by E. Sundari and Endang Sumiarni (2014) in the Religious Court of Wonosari Regency and Yogyakarta City, and the General Court of Wonosari Regency, Indonesia. The first paragraph of *this paper* explains the contradiction about the development of child marriage regulated in Act No. 1 of 1974 and Act No. 23 of 2002. The second paragraph explains the attitude of parents and judges regarding the contradiction in two places in Indonesia, i.e Wonosari Regency and Yogyakarta City.

2. The Contradiction Between Act No. 1 of 1974 and Act No. 23 of 2002 in Child Marriage Provision.

According to Act No. 23 of 2002, child-marriage means the marriage between people under 18 years old. Under the terms of Article 26 paragraph (1) c of Act No. 23 of 2002, parents are obliged to prevent child- marriage. Meanwhile, Article 7 paragraph (2) of Act No. 1 of 1974 determines that in the condition where the groom and bride do not meet with the age

requirement (sixteen years old for woman and nineteen years old for man), their parents may request for a dispensation to the Court or any other official. It reaffirms in Article 15 of Presidential Instruction No. 1 of 1991 (Rasjidi, 1991). Based on that description, there is a contradiction rule of law. The Article 7 (2) of Act No. 1 of 1974 on Marriage provides an opportunity to apply for dispensation in child-marriage. Article 26 paragraph (1) c of Act No. 23 of 2002 on Child Protection Act assigns parents to prevent child-marriage. The development of child marriage running from dispensation (in Act 1 of 1974) to prevention (in Act 23 of 2002). What is the basic principle behind the development of child marriage provision?

3. The Basic Principle Behind the Development of Child Marriage Provision

Based on Article 1 of Convention on the Rights of the Child 1989, a child means every human being below the age of eighteen years. The marriage in age sixteen years old as permitted in Act 1 of 1974 then can be said as a child marriage. Article 3 of the Convention moreover *prescribes*: (1) In all actions concerning children, whether undertaken by public or private social welfare institutions, courts of law, administrative authorities or legislative bodies, the best interests for the child shall be a primary consideration ([http://www.ohchr.org/Documents/ Professional Interest/crc.pdf](http://www.ohchr.org/Documents/Professional%20Interest/crc.pdf)). *The best interests for the child* principle was then adopted by the Article 2 of Act No. 23 of 2002 as one of the primary consideration in protecting the children. *It is included as the primary consideration in promulgating Article 26 paragraph (1) c of Act No. 23 of 2002 on Child Protection which assigns parents to prevent child-marriage.* Giving the authority to parents to request dispensation of their child-marriage as stipulated in Article 7 paragraph (2) of Act No. 1 of 1974 violates the Convention on the Rights of the Child 1989, Act No. 23 of 2002, and Article 23 paragraph 3 of the International Covenant on Civil and Political Rights adopted by the General Assembly of the United Nations on 19 December 1966 (Ratified by Indonesia through Act No.12 of 2005).

Child-Marriage, indeed, is not an ideal marriage since: (a) One or both of couple still underage; (2) Usually because the woman has already been pregnant, to cover the "disgrace" and not on the basis of love and approval intact. Parents who apply for dispensation often do not realize that such marriage is precisely very susceptible to other modes of violence. *Several forms of violence* are sexual violence which continuously happen in the life of child marriage, marriage cancellation filed by the husband or the husband's family, or divorce filed by the husband at the beginning of their marriage. Moreover, it is possible to cancel or divorce in marriage provision Act No. 1 of 197. (see Article 22).

An expression saying that "Rights for the best interest for the child" does not mean that what

is expressed by a child is the best for the child. There are some limits of rights of the best interest for the child, namely:

- a. Right to express his/her views freely in all matters affecting their lives being given due weight in accordance with the age and maturity of the child and with the values of morality and propriety (See, Article 12 of Convention on Rights of the Child (CRC); also Article 10 of Act 23 of 2002).
- b. Right to participate fairly in accordance with human dignity (as stated in Article 4 of Act No. 23 of 2002 and in accordance with Article 31 of CRC).

There is no standard on the definition of fair participation. It is needed to be studied to make the definition clear.

The rights on the best interests for a child should be considered in implementing Act No. 1 of 1974 and Act No. 23 of 2002. How did the parents and judges give their attitude facing this issue? Bellow are described.

4. The Attitude of the Parents and Judges

Act No. 23 of 2002 assigns parents to prevent child marriage. In fact, related parents filed for dispensation for their child marriage as shown in Figure 2.

Religious Court	Year of 2011	Year of 2012	Year of 2013	Year of 2014 (by June)
Wonosari Regency	145	174	166	55
Yogyakarta City	61	44	46	20

Figure 2 Child-marriage dispensation filed by parents in Religious Court of Wonosari Regency and Court of Yogyakarta City in 2011, 2012, 2013, 2014 (source: http://pa-yogyakarta.net/component/option,com_wrapper/Itemid,292/)

In general, the economic background of the parents such as coming from families who can not afford could be seen from their job as laborers and farmers--(E:Sundari & Endang Sumiarni, 2014). Based on fact of the economic background of the couple, it may raise a question, whether the groomeconomically be responsible for his family. The economic bacground also become one of the factors of divorce as practices in Wonosari Religious Court. It can be seen in Figure 3.

Year	Economic factor	irresponsibility factor
2011	194 cases	463 cases
2012	187 cases	641 cases
2013	81 cases	532 cases

Figure 3 Factors of divorce (Source: Yearly Report of Wonosari Religious Court, 2011-2013)

Those factors meet with the information from Chairman of Wonosari Religious Court (Interviewed at 12 July 2014). *He said* that there was a *strong* correlation between the child-marriage with the high number of divorce of the marriage, especially because of their dependent economic situation.

The main task of the judge is to receive, examine, hear and resolve cases submitted to it by making decision (Mertokusumo, 2010). Decisions of judge shows the attitude of judges in interpreting law. The judges should consider appropriately on the legal basis and justice (Article 53 paragraph 2 of Act No. 48 of 2009). In deciding civil cases even the judge must make legal considerations that may not be raised by the parties, as stated in Article 178 paragraph (1) HIR (Mr.R.Tresna, 1989). In the deliberation phase, each judge shall submit an opinion on the matter that will become an integral part of the decision. The different opinion that may be submitted by the judge must be noted in the decision (See Article 14 paragraph (2) and (3) Act No. 48 of 2009). This procedure will be applied even in facing a contradictory rule of law that may raise a different attitude among the judges when they should constitute the decision.

The contradictory rules often referred to as antinomy, that can be drawn as conflict or contradiction between the two fundamental things that seemingly can not be solved (C.Mish et al, 1991). In the legal field, antinomy means two rules of law in value or philosophical conflict, not logically (M.Manullang, 2007). The contradiction between Act No. 1 of 1974 and Act 23 of 2002 in the development of child-marriage rule of law means the contradiction in value or philosophical. Theoretically, to choose which one of the rules should be taken in the child marriage dispensation cases, the jugdes may use one of three principles, namely: 1) *Lex specialis derogat legi generalis*; 2) *Lex superiori derogat legi inferiori*, 3) *Lex posteriori derogat legi inferiori*. In fact, the jugdes of Religious Court of Wonosari Regency decided differently.

Based on 11 court decisions as well as interviewed with the Chairman of the Wonosari Religious Court on July 12, 2014, the reasons of filing child-marriage dispensation mostly were *because* the partners had been dating long, intercoursed, and got pregnant. *Partners and*

parents of both bride argued that marriage was the best way to cover the shame of pregnancy, especially from Islamic fiqh point of view, that said: resist damage precedence than attractive benefit (*menolak kerusakan lebih didahulukan daripada menarik kemaslahatan*), as implied in Article 53 paragraph (2) of Islamic Law Compilation. On the other hand, in the presence of forced marriage, the bride can plunge into a life that is not ideal *i.e* physically and psychologically still "children", and economically dependent. That un ideal situation were mostly triggering for divorce. How did the jugdes decide?

Considering the facts *that* the judge decided that the child-marriage dispensation can be given, even if the developed law (Act No. 23 of 2002) determines that the parents are obliged to prevent child marriage. Further questions can be raised, whether the consideration and the legal basis used by the judge in granting child-marriage dispensation is appropriate to the rights for the best interests for the child?

Theoretically, obliging provision override purely arbitrary provision. It means, in case there is a request for child-marriage dispensation, judges logically do not have to accept the request (*niet onvankelijke verklaard*) because it opposed to the obliging provision ("shall to prevent child-marriage) as adopted by Act No. 23 of 2002. Based on the *lex posteriori derogat legi priori* principle, judges should apply Act No. 23 of 2002 too because it is the latest provision that has been made concerning to child-marriage. Based on the *lex specialis derogat legi generalis* principle, judges should apply Act 23 of 2002 too because it is the more spesific provision (protection on child relating to the marriage) than Act 1 of 1974 (provides marriage in general).

Article 3 paragraph (1) Convention on the Rights of Child *states* that In all actions concerning children, whether undertaken by public or private social welfare institutions, courts of law, administrative authorities or legislative bodies, the best interests of the child shall be a primary consideration (<http://www.ohchr.org/en/professionalinterest/pages/crc.aspx>). That provision is adopted by Act No. 23 of 2002 on Children Provision. Based on this provision, when judges examine and decide upon the child-marriage dispensation, the main consideration should be "in the best interests for the child". *Does make the child marriage fulfills the principle of 'the best way to give best interest for child', in case the children have been dating for a long time and the girl has been already pregnant?* The answers can be vary, depend on point of view of the "interest".

- a. In case the interest is saving the fetus to have a legitimate status as well as covering the "disgrace" pregnant, it meet with the best interests for the child principle, especially for saving his good name, family name, and the legal status of the fetus.
- b. In case the interest is the future life of the child-marriage, it will trap the child into a unideal marriage since both of spouses are still young. The marriage will only do merely to cover the "disgrace" pregnant, and not on the basis of love and approval intact. Eventhough the child confirmed that they loved each other, voluntary and ready to be responsible in the trial, it was not logi and realistic. That unideal marriage can ultimately lead to divorce because of economic and unresponsible reasons for the lack of maturity. Data in Figure 3 shows such things. From this point of view, marrying the child will become contradiction with the principle of "the best interests for the child".

There are two defferent answers whether granting child-marriage dispensation meets with "the best interest for the child" principle or not. On the one side it meets with "the best interest for the child", but the other side does not meet with "the best interest for the child". A more question then: Which one should be better? Marrying them or not? This is not an easy question to be answered. The answer can be found by answering the following question: in case there are two options that both equally not such a good idea, which ugliness then can still be avoided? Preventing or delaying them to get married seems better than vorcing them to get married by filing dispensation for child marriage.

In case the child is already pregnant, marrying them then will force them into unideal marriage in their life. The child in young marriage will also tend to loose their chance to reach a higher education, to grow up as free as another teenager because she should be an unwanted mother or maybe unwanted wife. It raised their stress and made them unhappy. *As a solution*, the parents *could* delay the marriage, adopt the child who will be born, provide an opportunity for her to grow up as a teenager, to get an appropriate, and to enter into a mature marriage. It gives great possibility to the children to be happier in their lives.

The judges and the parents surely can choose one of those points of views. Legally, the judge's choice to grant child marriage dispensation can be protested. On the other hand judges have a pragmatic consideration which also can not simply be blamed in a certain circumstances and area.

CONCLUSION AND PROMOTION

Based on the analysis conducted above, it can be concluded that the development of rule of law concerning with child-marriage in Indonesia are in contradictory, and the latest rule of law can not be full implemented in a certains areas based on the circumstances as follows.

1. The parents tend to propose the child marriage dispensation than to prevent the marriage in case their child has been already pregnant.
2. The judges will grant child-marriage dispensation in case the child has already been pregnant, that interpreted still met with the right of “ the best interest for the child” principle eventhough not entirely appropriate, also met with the living law in Wonosari, and with the fiqiyah law principle.

The parent could delay their pregnant-child to get married to meet the best interest for the child principle as stipulated in Act No.23 of 2002 on the Child Protection.

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<http://www.ohchr.org/en/professionalinterest/pages/crc.aspx>



MIS-Management Information System 2 / Management 5

Roma

2015/07/22 Wednesday 15:15-16:45

Session Chair: *Prof. Michiko Miyamoto*

BREFM-22385

Telepresence in Watching Stream Games Online: Understanding the New 'Let's Play' Culture

Haejung Yun | *Yonsei University*

Kyubin Cho | *SK Planet, Co., Ltd*

Choong C. Lee | *Yonsei University*

ISBSS-4520

Consideration of IT-Business Alignment Based on Organizational Structure

Michiko Miyamoto | *Akita Prefectural University*

ISBSS-4555

Relationship between Innovation and Organizational Performance in Construction Industry in Malaysia

Megat Zuhairy Megat Tajuddin | *Universiti Teknologi MARA*

Hadijah Iberahim | *Universiti Teknologi MARA*

Noraini Ismail | *Manipal International University*

ISBSS-4563

Does Product Innovativeness Strengthen the Effect of Strategic Orientation on Performance?

Sabai Khin | *Universiti Sains Malaysia*

Theresa C.F Ho | *Tunku Abdul Rahman University College*

ISBSS-4618

Brokerage Activities in Regional Innovation Networks: The Case of Daegu Technopark in Korea

Jong Hwa Park | *Kyungpook National University*

BREFM-22385

**Telepresence in Watching Stream Games Online: Understanding the New
'Let's Play' Culture**

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Abstract

Over the last few years, live video game streams have become the meeting grounds for gamers, as well as marketing means for game developing companies, and emerged as a new trend among them. Following the trend, the emergence of 'Let's Play' culture largely changed the way people enjoy video games. To academically explore this new phenomenon, this study will seek answers to the following research questions: (1) Does 'engaging in the game streams' give the feeling equivalent to actually playing the game?, (2) If so, what are the characteristics of the streamers that enhance such experience?, and (3) How does such experience affect viewer's perception towards streamed game? We generated a research model based on telepresence theory and consumer learning theory and empirically tested it. Through various statistical analyses, it was proved that (1) interactivity of the technological features of the platform is a significant antecedent of viewer's telepresence, (2) authenticity and commitment of the streamer positively affect telepresence, and (3) telepresence is positively associated with consumer learning of the streamed game. Theoretically, this study is significant in that, unlike previous research which concentrated mainly on the technological features of the media and their effect in formation of telepresence, it identified the characteristics of 'streamer' by defining it as non-technological mediator that affect telepresence. Based on these research findings, various practical implications were discussed for game developers as well as the streaming platform providers.

Keyword: Telepresence, AfreecaTV, Game stream, Consumer learning

Introduction

Over the last few years, live video game streams have become the meeting grounds for gamers and emerged as a new trend among them. The streaming medium combines video broadcasts with open IRC chat channel, enabling communication among the streamers and viewers in conjunction with the game play of the streamer. The streaming platforms such as AfreecaTV (Korea), Twitch.TV (U.S.) and Niconama (Japan) provide all the necessary requirements to stream easily for anyone with a personal computer.

The streaming platform enables streamers to broadcast high-quality video of the gameplay and real-lives of the streamers through embedded webcams. The viewers participate in the stream through communicating in the associated chat channel. According to the research conducted by Twitch.tv in 2014, nearly 59% of the gamers watch more livestreaming content now compared to last year and 36% have stated they would rather watch a program through live streaming than conventional TV. As the number of both streamers and viewers both increases substantially every day, it is safe to say that video game streams play a dominant role as a hub for the gamers.

The game streams not only show the gaming experience of the streamer but also through viewer's active feedbacks and comments to the streamer on 'how to' and 'what to' play games generate the feeling of playing games 'together', hence the name 'Let's play'. The fact that these live streams of video games have become the 'mecca' for gamers, there is a growing interest among game developers and video game related businesses to utilize the platform as a marketing channel. Even though there have been successful cases in marketing games through streamers, it is still in its primitive form and academically assessing the platform's capability as a game marketing channel is of a great need. From the research motivation discussed above, this study will seek answers to the following questions:

- 1) Does the act of 'engaging in the game streams' give the feeling equivalent to actually playing the game?
- 2) If so, what are the characteristics of the streamers that enhance such experience?
- 3) How does such experience affect viewer's perception towards the streamed game?

To seek answers to the research questions defined above, this study incorporates the theory of telepresence for viewer's experience of engaging in the stream, as well as examination of consumer learning process to see the effects of such experience to viewer's perception towards the streamed game. Also, by identifying the characteristics of the streamer in addition to technological characteristics of the platform, that affect viewer's experience in

participating in the game streams, the results of the study is expected to further our understanding of the new phenomenon.

Literature Review and Conceptual Background

1. Personal Streaming Platform and the Emergence of 'Let's Play' Culture

Personal streaming platforms, such as AfreecaTV (Korea), Twitch.tv (U.S.) and Niconama (Japan) although with a little difference in the looks of their interface, combine both live audio/video media and text-based chat channels. The streamers utilize the platform's broadcasting features to stream game plays real-time, where the viewers watch and engage in the stream through chatting. The typical interaction between the streamer and the viewer is as follows: the streamer talks to the viewers through the platform's broadcast audio where the viewers then tries to communicate to the streamer and each other through sending messages with the chat feature. The streamer tries to read through the chat messages and respond accordingly as he / she plays.

Such unique characteristics of game streams gave birth to the 'Let's Play' culture. 'Let's Play' (LP) is defined as a series of screenshots or, more commonly, a recorded video documenting a play through of a video game, always including commentary by the gamer. An LP is different from a traditional walkthrough or strategy guides posted on blogs and community sites by focusing on an individual's subjective gaming experience, often with humorous, irreverent, or even critical commentary from the gamer, rather than being an objective source of information on how to progress through the game [23]. The new phenomenon is of utmost importance among concerned parties in the game industry. Understanding the streamers and viewers, as well as the whole experience of 'engaging in others' game play' is crucial to clearly identifying the needs and wants of the gaming population.

2. Theory of Telepresence and Roles of the Streamer

Telepresence refers to the sense of being in a mediated environment [10, 21] or the mental process of perceiving a mediated world as non-mediated [13], or is simply defined as 'perceptual illusion of non-mediation' [14]. The term was first coined by Marvin Minsky [15] in reference to teleoperation systems for remote manipulation of physical objects[21]. It stems from the larger notion of "presence" which Steuer [21] puts it as "the key to defining virtual reality in terms of human experience rather than technological hardware", and is widely used in researches with regard to virtual reality [6, 17, 22]. However, through various researches on diverse contexts, not only the technological factors but also non-technological causal factors and the effects of the feeling of presence have been either empirically identified or theoretically argued.

In game streaming context, not only is the subjective gaming experience delivered to the viewers in real-time with high-quality images and sound, the platform also offers the means to interact and engage in the game play with the streamer. As noted by Schubert et al. [20], “although all media can evoke feelings of telepresence, consistently, across disciplines, increased presence is found with interactivity”, the streaming platform’s interactive features, as well as the streamer’s characteristics is bound to play a critical role in creating and also elevating the telepresence experience of the viewers. It is in fact through the streamer which the viewers portray themselves of actually playing the game when in reality, they are merely watching it through their medium of choice.

Research Model and Hypotheses

1. Research Model

Based on the conceptual foundation discussed above, the research model was generated as “Figure 1”.

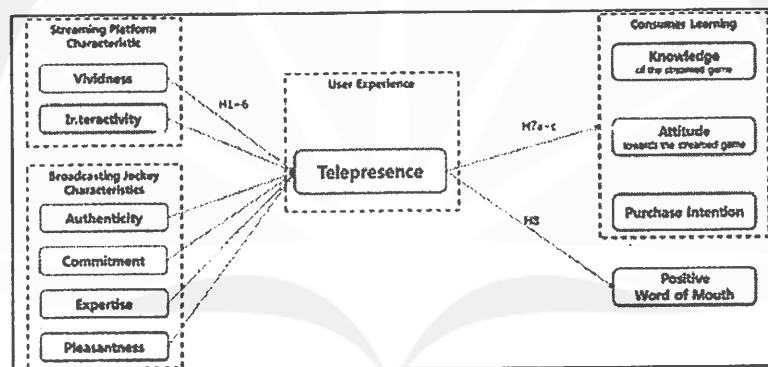


Figure 1. Research Model

2. Characteristics of Streaming Platform

2.1. Vividness

Vividness means “represented richness of a mediated environment as defined by formal features; that is, the way in which an environment presents information to senses” [21]. In streaming platforms, the interface which the viewers perceive the streamed game presents similar visionary and auditory cues as expected from the actual game play. Hence, it is reasonable to assume that the quality of the streamed image and sound of the game play a crucial role in providing the similar gaming experience one could expect, positively influencing telepresence.

H1: Vividness of the streamed game is positively related to telepresence.

2.2. Interactivity

In the works of Steuer [21], interactivity is defined as 'the degree to which users can manipulate the form and content of a mediated environment in real time'. The technological characteristics of the interactive medium have been identified to increase the level of telepresence in previous studies [16, 22]. Despite the platform's limitation on the mapping ability, the viewers discuss among other viewers and provide various inputs to the streamer of how the game should and is to be played in forms of advice and feedback. Such actions from viewers can be deductively seen as their action or their willingness to 'manipulate the form and content (game play)' even if they are not actively adopted by the streamer.

H2: Interactivity of the streaming platform is positively related to telepresence.

3. Characteristics of Streamer

3.1. Authenticity

The depictions that do not conform to natural occurrences could result in a quick discounting of immediate emotional responses, as their artificiality becomes clear [24]. Also, media depictions that depart from naturalistic sensations will also most likely result in a psychologically distant user [4]. Hence, when the streamer expresses emotions basing on the honest feeling he or she encounters while playing the game, it is perceived by the viewers as much more 'believable' drawing in the viewers to share similar feelings to increase the level of telepresence.

H3: Authenticity of the streamer is positively related to telepresence.

3.2. Commitment

From observation of streamed games, frequent AFKs (away-from-keyboard) and distracting actions by the streamer that does not relate to the game play result in rapid breakaway by the viewers. Hence, the perceived level of commitment of the streamer towards streaming games by the viewers will have an effect on the formation of telepresence.

H4: Commitment of the streamer is positively related to telepresence.

3.3. Expertise

Current studies regard celebrities as opinion experts and credible spokespersons [11, 18] in consumer's buying decisions. Also, as studies on celebrity worship reveal, consumers form parasocial bonds with favored celebrities who shape their lifestyles, attitudes, and behaviors [5, 8]. When the viewers' desire to confirm the credibility of the information delivered by the streamer is satisfied by the streamer's objective skillfulness and the amount of knowledge in playing the game, viewers are safely immersed in the stream experiencing telepresence.

H5: Expertise of the streamer in playing the game is positively related to telepresence.

3.4. Pleasantness

Research by Berlo et al. [1] have confirmed that dynamism; boldness, fancy, showy nature of the spokesperson in persuasion communication maximizes the effect of message delivered. Hence, such dynamic feature of the streamers, in other words, the communication manner in the way they show the gaming experience to the viewers should play a role in viewer's immersion to the stream, affecting the level of telepresence. When the manner consist of the characteristics viewers feel pleasant towards, the viewers are free from distractions made by the streamer, successfully able to immense in the game play itself.

H6: Pleasantness of the streamer is positively related to telepresence.

3.3. Telepresence and Consumer Learning

Experiencing telepresence through media greatly increases user's understanding of the mediated content [22]. As has been discussed in the literature review of telepresence, it affects 'memory' of the users and can be used to 'persuade' users as presence positively influence the message credibility [2, 12, 19]. Hence, when the viewer engages in the stream with increased level of telepresence, the experience also engages them in learning processes and increases their comprehension of the streamed game. In addition to the increased understanding, more arousal generated via the game increases the joy and excitement of the players hence they are more likely to talk to their friends about the elevated experience. Hence we hypothesize as follows:

H7: Telepresence is positively related to consumer learning (knowledge, attitude, purchase intention) of the streamed game.

H8: Telepresence is positively related to positive word-of-mouth of the streamed game.

Data Analysis and Results

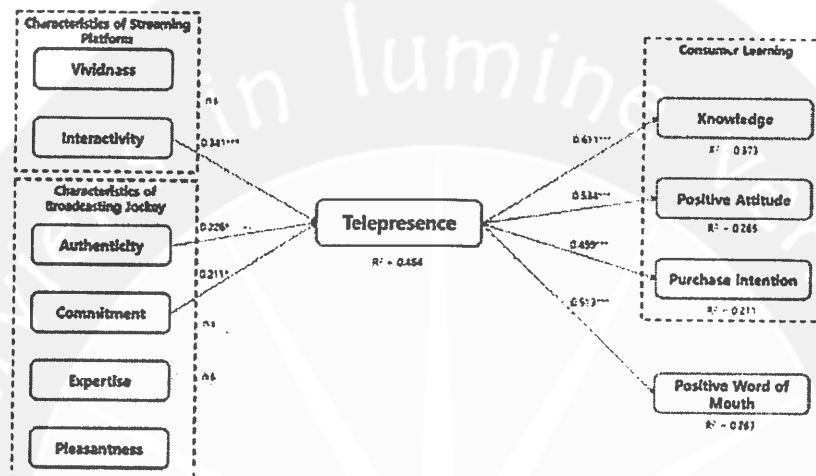
1. Measurement Model

Smart PLS 2.0 was used to test the measurement model and the structural model. It is more suitable to use PLS for exploratory studies such as ours than for rigorous and confirmatory studies. As a result of confirmatory factor analysis (CFA), after excluding some measurement items, factorial validity of the measurement model was ensured with all the AVEs (average variance extracted) higher than 0.5 and the composite reliabilities higher than 0.7 [3, 9].

2. Hypotheses Testing

PLS uses a bootstrapping method to test the significance of path coefficients. The results are summarized in "Figure 2". The R² values of telepresence, knowledge, positive attitude, purchase intention, and positive word of mouth was 0.464, 0.373, 0.285, 0.211 and 0.263 respectively, all of which were desirable [3, 7].

All suggested direct relationships excluding vividness, expertise, pleasantness (H1, 5, and 6) were supported. The result of the hypotheses testing explains that the interactivity of the platform and authenticity and commitment of the streamer affect viewer's telepresence experience, and such experience has a strong positive impact on their learning of the streamed game. Also, the experience of telepresence has been identified to also affect positive word-of-mouth of the streamed game by the viewers.



[Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, n.s.=not significant at the 5% level]

Figure 2. Structural Model Testing

Discussion

1. Research Findings

The research findings can be summarized as follows: First, viewer's experience of telepresence through engaging in the game streams was found to have positive effect on all stages, knowledge (cognitive), positive attitude (affective) and purchase intention (conative) stages of consumer learning of the streamed game. Secondly, it has been found that only interactivity of the platform's technical features has been found to positively affect viewer's feeling of telepresence. The findings are different from the previous studies where vividness of the mediated content strongly affects telepresence [21, 22], however, this may be due to the way people watch the streams also with what medium. Nearly 60% of the viewers in AfreecaTV use smartphones and tablet PCs to watch the game streams, where there is a limitation in the graphical images of the streamed game in its size and similarity of the game play if the game they are watching is a PC game. On the other hand, interactive features, mainly the chatting functions and measures to communicate with the streamer is present in the mobile version, enabling effective interaction. For streamer's characteristics, it has been found that their authenticity and commitment positively affect viewer's telepresence. Even

though streamers are not celebrities or a politicians where authenticity is regarded as important, nevertheless, streamers are iconic figures that viewers expect genuineness and trustworthiness from to actually feel empathic towards, and to be immersed in the game play with them.

2. Implications

This study is significant in that unlike previous research which concentrated mainly on the technological features of the media and their effect in formation of telepresence, this study identified the characteristics of 'streamer' by defining it as non-technological mediator that affect telepresence. Many of the studies on identifying non-technological causal factors had been limited to the participant-dependent factors and not touched on the 'observant' aspect as this study has done. Through the result of this study, we believe a new category of the causal factor of presence may be required to understand the very nature of viewer's formation of telepresence in game streaming context.

This study has provided a starting point in academically approaching the phenomenon of 'Let's Play' culture and users of game streaming platforms. It is worth exploring how much of streamer's success can be attributed to the success of marketing games through them. Marketing through streamers is in its primitive stage at the current state, however, with more people tuning into such streaming platforms and its culture being dominant among the gamers, a more thorough examination of its marketing capability must be looked into.

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ISBSS-4520
**Consideration of IT-Business Alignment Based on Organizational
Structure**

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ABSTRACT

The purpose of this study to indicate the details of “Structured based Strategic Alignment Model (SSAM)” which specify “Structure” and “Infrastructure” portions of Strategic Alignment Model (SAM), by adding roles and effects of different departments. SSAM is reinterpreted and extended by introducing the prior research on the concepts of strategic integration, corporate structure integration, and functional integration. This study also emphasizes cultural consideration on business-IT alignment.

Keyword: IT-Business Alignment, Structured based Strategic Alignment Model

1. Introduction

The environment in which organization operate is seen as becoming increasingly complex and unpredictable as technological changes accelerate within a world (Dicken 2007). According to Gartner, Inc., the world’s leading information technology research and advisory company, role of IT within leading enterprises is moving from a technology focus to a focus on business process and relationships (Mahoney, 2010). The competitive and ever fluctuating market is forcing many companies to spend huge amounts of money in the Information Technology (IT) sector, since it has been increasingly accepted as a vital requirement for organizations to obtain competitive advantage and innovation. According to IDC Japan, a market scale of Japanese domestic IT service in 2014 was 5.1893 trillion yen, which has been increased by 3.1% compared to 2013, and expected more growth in 2015¹. Figure 1 shows transitions in nominal market sizes by sector in the ICT industry in Japan. The importance of achieving alignment between business and IT is widely recognized by many researchers and practitioners, and most companies have significant work to do before achieving business-IT alignment successfully. In order to build a more effective understanding and working relationship between line business and information systems (IS) departments, an effort to build partnership between the IS and other groups

¹ <http://www.idcjapan.co.jp/Press/Current/20150218Apr.html>. Retrieved 8 April, 2015.

regarding the role and importance of information systems to each corporation's business context would provide major impact (Main and Short 1989).

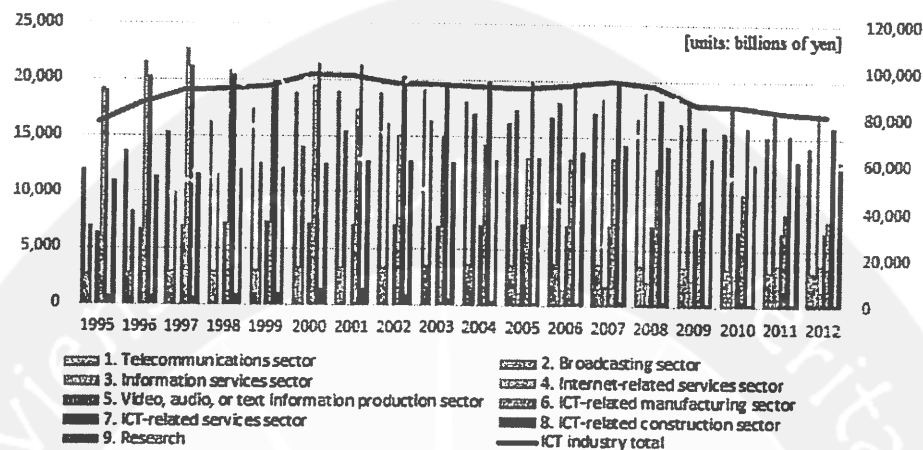


Figure 1: Transitions in nominal market sizes by sector in the ICT industry in Japan (Source) "2013 Communications Usage Trend Survey," MIC (2014)

However, a large gap between IT and the business seems to exist, and that much work needed to be done to achieve alignment between the business and IT. In practices, some divisions, such as accounting or HR, have traditionally kept IT distanced from other business departments, according to an IT consultant in the US (Welsh, 2013). Most companies have significant work to do before they reach the point where IT and business strategies, goals and priorities are soundly aligned.

This paper reinterprets "Structured based Strategic Alignment Model (SSAM)" suggested by Miyamoto (2014) in the light of the relevant literature in strategic integration, corporate structure integration, and functional integration. The cultural consideration on business-IT alignment are also explored. Each component of SSAM is expounded.

2. Literature Review

2.1 IT and Corporate Structure

Traditionally, a key role has been attributed to technology as a determinant of organizational structure (Burns and Stalker 1961; Woodward 1965; Hage and Aiken, 1969; Zwerman, 1970 and Perrow 1967). The aspect of technology, however, as a factor affecting organizational structure tended to deal only with the production technology used in the organization, and information technology were not considered (Pfeffer and Leblebici 1977). Today's Information Technologies (IT) penetrates all organizational processes by supporting

organizational goals and corporate governance, and affects corporate structure. In many organizations, IT has become crucial in the support, the sustainability and the growth of the business.

Organizational structure was one method of managing the interdependence in the organization created by the particular technology being employed (Thompson 1967). Management needs to plan and execute, not from the technology end, but based on the business strategies in order to make IT deliver business values beyond supporting daily operations (Hirano, 2013).

Information systems support people in organizations at different organizational levels, *i.e.*, each department, each plant, each division, each enterprise, inter-organizational, and global offices for an international or multi-national corporation (Turban, Rainer and Potter 2005). Most corporations consist of multiple divisions, such as human resources (“HR”), accounting, logistic, marketing, sales, and manufacturing, which set their own strategy, *i.e.*, “business strategy” (Miyamoto 2014).

Pfeffer and Leblebici (1977) analyzes data collected from the CEO of the 38 organizations, and found that there were consistent and frequently strong relationships between the measures of information technology and the number of departments and the number of levels in the hierarchy, and there would be a positive relationship between information technology and structural elaboration in the organization.

May (2006) surveyed the state of the relationship between IT and human resources departments, amassed 151 responses from thought leaders and practitioners on comprised large enterprises (51%) and mid-sized companies (49%). The survey was conducted worldwide; among respondents, 10% work for companies located in Asia, 10% for companies in Europe, and 80% for firms in North America. May (2006) suggests that some CIOs know that managing and cultivating HR leaders aggressively are critical to success, since high performance IT organization has a liaison who negotiates effectively between IT and HR.

In Germany, Deutsche Bank, which operates its business worldwide, has changed a direction for its HR function, which becomes a strategic partner to the business, by having an objective to improve the alignment of HR work with business strategy. The HR Division’s responsibilities included the development of talents and knowledge to Deutsche Bank’s employees in accordance with the strategic business model and in cooperation with the employees and their supervisors (Svoboda and Schröder 2001).

Maes et al. (2000) suggest that structural alignment basically concerns decisions concerning variables like architectures and capabilities. And alignment of those variables over the different areas (horizontal), as well as alignment of those variables from the strategy level and from the operations level (vertical) should be considered.

2.1 IT-Business Alignment

A great deal of alignment research has been conducted from various viewpoints, and many have found that a key success factor in organizations is an effective and efficient alignment of the way IT supports business strategies and processes. Many studies on strategic alignment support the hypothesis that organizations that have successfully aligned their business and IT outperform organizations that do not, and two distinct conceptualizations of alignment can be found in the literature (Chan and Reich, 2007).

Henderson and Venkatraman (1989) proposed the realization of business-IT alignment by balancing four areas: business strategy, IT strategy, organization platform, and IT platform, using the strategic alignment model (SAM). External and internal factors of both business and IT strategy must fit (have “strategic fit”), and functions of business and IT must be integrated in order to balance the four areas. Sabherwal et al. (2001) improved the strategic formation system management profile model, which is similar to SAM. They examine the dynamics of how alignment changes through strategy/structure interactions in the business and IS domains. These studies are significant in that they focus on IT effectiveness from the management point of view as well as the technical point of view. Maes et al. (2000) refine SAM by identifying three columns and three rows, i.e.; business, information/communication, technology; strategy, structure and operations. Luftman developed a maturity assessment model, based on the 12 elements of Business/IT-Alignment, which can be recognized in the model of Henderson and Venkatraman. This model is called as Luftman's “Strategy Alignment Maturity Model” (SAMM) (Luftman, 2000).

By modifying the Strategic Alignment Model, Miyamoto (2014) proposes “Structured based Strategic Alignment Model (SSAM)” specifies “Structure” and “Infrastructure” portions of Strategic Alignment Model (SAM) proposed by Henderson and Venkatraman (1993), by adding roles and effects of different departments as shown in Figure 2.

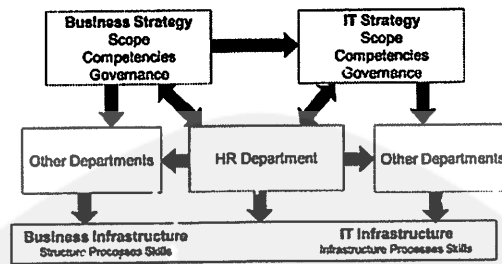


Figure 2: Structured based Strategic Alignment Model (Miyamoto 2014)

3. Structured based Strategic Alignment Model (SSAM)

As shown in Figure 2, SSAM is configured based on strategic integration, corporate structure integration, and functional integration.

3.1 Strategic integration: Business strategy and IT strategy

One of key success factors in organizations is an effective and efficient alignment of the way IT supports business strategies and processes. A business strategy can be used to allocate company resources as decision makers can refer to it to ensure decisions are in line with an overall company focus (Henderson, 1989; Rigby et al, 2002; Henderson and Venkatraman, 1993; Beinhocker, 1999; Porter, 1991; Porter, 1980; Porter, 1985; Peteraf, 1993; Barney, 1991). Strategy is a deliberate search for a plan of action that will develop a business's competitive advantage and compound it (Henderson, 1989). Many studies on strategic alignment support the hypothesis that organizations that have successfully aligned their business and IT outperform their non-aligned peers (Chan et al., 1997).

3.2 Corporate structure integration

A corporate structure is essentially the layout of the various departments, divisions, and job positions that interact to conduct the business of the company. In an extensive overview of organizational structure and its many component parts, Robbins (1990) indicates that organizational structure determines the pattern of communication as well as the formal lines of interaction between individuals within organizations, and discussed ways many of those parts are related to one another and therefore affect organizational structure. An organization structure defines task allocation, reporting relationships, and formal coordination mechanisms in an organization. Generally, such a structure is necessary in order to ensure that all-important tasks are conducted according to the guidelines of the corporation, as well as providing lines of communication and authority for the overall function of the company.

The general conclusions are that organizations must fit structure and processes if the strategy wants produce positive results (Chandler, 1962; Channon, 1971). A corporate structure

usually helps to accomplish three things. First, the corporate layout helps to define all the areas of responsibility within the company. The accounting department is understood to handle all financial matters, such as paying the bills of the company and also issuing invoices for services rendered. The sales department works to ensure there are efforts to market the goods and services produced to the consumer market. Provisions for executive, managerial, and administrative matters are also normally accounted for in the structure, so that everyone in the organization knows where a given issue should be addressed.

3.3 Functional integration

The functional structure divides the organization based on a logical grouping of members that share common tasks or goals. An organization that manufactures a product, for example, some of the common functional units may be production, sales, accounting, marketing, human resource, and public relations. Peters (1993) identified the functional structure, or structure based on division by specialization, as the most common organizational design. Leavitt's classification of organizations as a diamond, (Figure 2) in which Task, Technology, People, and Structure are interrelated and mutually adjusting, indicates the complex nature of social systems (Leavitt 1965) When Technology is changed, the other components often adjust to damp out the impact of the innovation. Information technology increasingly alter relationships, patterns of communication and perceived influence, authority, and control (Keen 1981) between functions within corporations.

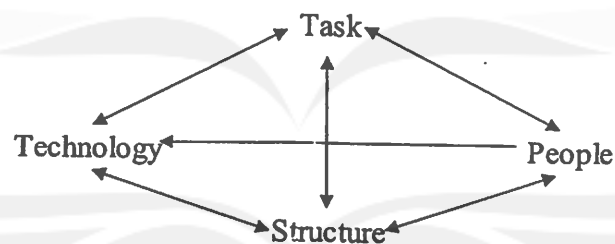


Figure 2: The Leavitt "Diamond": Components of the Organization

4. Cultural Considerations on Business-IT Alignment

Since cross-cultural differences in management have been seen (Kawar 2012), it is important to consider business-IT alignment on the national cultural viewpoint.

In the context of business-IT alignment maturity, a potential influence of national cultures has been reported in several studies. Silvis (2008) present the influence of culture on business-IT alignment based on Hofstede's framework of cultural dimensions (Hofstede, 1980). Hofstede (1980) presents a model of national cultures which characterizes culture on

four dimensions; PDI (Power Distance Index), IDV (Individualism vs. collectivism), MAS (Masculinity vs. femininity), MAS (Masculinity vs. femininity), and UAI (Uncertainty Avoidance Index). Silvis (2008) creates a conceptual mapping of the potential effect of Hofstede's dimension of culture on Luftman's variables of business-IT alignment maturity. Based on this conceptual mapping, he makes hypotheses on relationships between cultural aspects and business-IT alignment maturity. Silvis et al. (2012) summarize comparative studies of cultural impacts on IT practices based on literature review on 12 empirical studies from 1994 to 2007. Based on the overview, they expect that social interaction would be highly impacted, and scope and architecture maturity would be the least influenced in the cultural aspects on business-IT alignment maturity. Their empirical study on three Belgium and three Dutch companies from the financial services sector found that the existence of differences between countries on business-IT alignment maturity was seen. Miyamoto (2014) put a focus on differences in a role of HR departments between corporations in Japan, and found that not only have HR possessed great power over other line departments, but over business strategy as well as IT strategy based on the survey data of 345 responses from Japanese SMEs.

6. Conclusion and Further Study

This study revisits modified Strategic Alignment Model, "Structured based Strategic Alignment Model (SSAM)." SSAM has expanded the portion of "Structure" and "Infrastructure" of SAM by adding roles and effects of different departments. SSAM is reinterpreted and extended by introducing the prior research on the concepts of strategic integration, corporate structure integration, and functional integration. This study also emphasizes cultural consideration on business-IT alignment, since corporate and functional factors of each firms are influenced by their cultural background, and so their methodologies of business-IT alignment are.

In order to see the cultural consideration on business-IT alignment, the international comparative analyses are needed to see each country has different organization issues on IT-business alignment.

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**Relationship between Innovation and Organizational Performance in
Construction Industry in Malaysia**

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ABSTRACT

This paper aims to discuss the relationship between innovation and organizational performance in the construction industry. In Malaysia, the construction industry is known to be one of the industries that contribute significantly towards her economic growth. This contribution, more often than not is associated with the amount of innovation invested by companies or government agencies in the industry. Superior performance is influenced by innovation and becomes imperative to drive the industry as a whole. The construction industry's innovation performance currently is reported to be amongst the lowest as compared to the other industries. This phenomenon contributed by the fragmented and complex product system characteristic of the industry as construction project implementation requires the involvement of varying combination of large and small organizations across the supply chain spectrum. The poor innovation performance amongst companies and government agencies in this industry has inspired this study initiative. The purpose is to unveil the extent of influence of innovation on performance. The instrument for measuring innovation and organizational performance specific to the construction industry was developed by adapting measures introduced by several scholars in these fields. Three dimensions represented innovation, namely innovative design solution, innovative project practices and advanced technology utilization. Project performance and business performance are the two dimensions to describe organizational performance in the construction industry environments. Contractors and consulting companies were the sampling frames of this study representing the construction industry in Malaysia. The lists provided by CIDB, BEM, BOA and BQSM were the population list of this study. The samples were selected based on a stratified sampling method to gauge representation of the different groups in the population. In this quantitative study, regression analysis was performed to assess relationships amongst

variables. The results revealed that in principal innovation is significantly positive in influencing organizational performance. Nevertheless, innovative design solution and advanced technology dimensions were insignificant in influencing project performance and business performance respectively.

Keywords: Innovation, Construction Industry, Organizational Performance.

Paper type: Research Paper

1.0 INTRODUCTION

In Malaysia, the construction industry has contributed significantly to establishing the infrastructure required for socioeconomic development and contributing directly to economic growth. Ibrahim, Roy, Ahmed, and Imtiaz, (2010) reported that the essential elements of a healthy, functioning economy drove by the educational institutions, government offices, tourist attractions, transportation infrastructure, housing, commercial property are built and maintained by the construction industry. The Economic Transformation Program (ETP) unveiled 131 entry point projects and 60 business opportunities. ETP aims in boosting Malaysia's gross national income (GNI) to US\$523 billion in 2020 from US\$188 billion in 2009. Out of these projects, the construction has the largest share entailing 60 percent of the total budget (Pemandu, 2010).

Malaysia's construction industry registered a growth of 5.8 percent in 2009, and subsequently 8.7 percent in 2010 and recently at 11.2 percent in 2013. When translated these percentages into projects awarded in the 9th Malaysia Plan, around 26,300 projects were awarded valued at RM380 billion compared to the 8th Malaysia Plan, which registered 25,700 projects valued at RM255 billion. RM230 billion development funds and RM20 billion facilitation funds allocated in the 10th Malaysia Plan, which covers the period from 2011 to 2015. These allocations have created the impetus in driving demand for the construction industry. Out of the RM230 billion for development expenditure, 60 percent or RM138 billion is expended in physical development undertaken by the industry. The RM20 billions facilitation funds are expected to attract private sector investments worth at least RM200 billions. The major portion would be involving the construction development projects (EPU, 2010) which include mega projects such as the Greater KL project and the RM36 billion Mass Rail Transit project. In addition, Malaysia's construction industry has established about 64,000 contractors and employs 800,000 workforces that include the professionals, supervisors, skilled and unskilled workers (CIDB, 2013).

In terms of Malaysia's GDP, construction industry only accounts for less than 5 percent; albeit its performance has a great influence on the overall economic growth. Ibrahim et al.

(2010) portrays the construction industry as an “essential growth enabler” due to its extensive linkages and integration with other industries namely the manufacturing that supplies construction materials. For example in 1998, when the construction industry experienced a sharp downturn, the metal industry in Malaysia saw a 35.6 percent drop in output (Ibrahim et al., 2001). Therefore, it is fundamental for the industry to sustain its growth and attain greater performance as it has a spillover effect on other industries.

Malaysia has strategically emphasized innovation as the key factor for higher growth and recognizes the importance of innovation as the catalyst for the country’s long-term success. ETP highlighted and recognized the significance of innovation as the impetus for achieving Malaysia’s Vision 2020. Barlow (2000) and Doree (2004) suggest that the construction industry needs to be dynamic, and countries need to setup reform programs to improve the industry’s performance. One of the goals of the programs is to enhance innovation. The Construction Industry Development Board (CIDB) echoed this notion by underlining innovation as one of the strategic thrust in the Construction Industry Malaysia Plan (CIMP) aiming for industry’s superior performance (CIDB, 2013). The CIMP that strategizes industry’s goals for the year 2006 to 2015 denotes the importance of innovation through research and development and through adopting new construction methods. Malaysia’s aim of becoming a developed country and a high-income economy status by the year 2020 can be realized by emphasizing towards the industry’s improved and greater performance through innovation.

While there are many pieces of research in the field of innovation available, studies within the perspective of the construction industry are limited. In fact, according to Sexton and Barrett (2003), the study of innovation has been perceived as being at the nascent stage in the construction and build environment field. Panuwatwanich, Steward and Mohamed (2008) conducted a study on the determinants of innovation and business performance in Australian architectural, engineering and design (AED) firms. They claimed that there were no known study on an empirical investigation of the cause-and-effect relationships between innovation determinants and the innovation outcome within the AED firm context. Steward, Mohamed and Marosszeky (2004) examined IT innovation in the Australian construction industry, and Salter and Gann (2003) explored on sources of ideas for innovation engineering design. In order to achieve that, they conducted a case study on a leading international engineering consultancy company in the United Kingdom (UK).

Within the ASEAN region, a study was conducted by Wan, Ong, and Lee (2005) to identify the factors that have an influence on innovation in Singaporean firms. The study examined innovation across all major industry sectors, one of which was the construction sector. The

study revealed that decentralized structure; the presence of organizational resources for innovation; the belief that innovation is important; willingness to take risks; and willingness to exchange ideas were identified to have a significant positive influence on innovation. On the local ground, despite the attentiveness on the importance of construction industry to the economy and the significance of innovation in contributing to the competitive edge of an organization, study on this subject is still at its infancy stage. The only known studies were conducted by Ismail (2005) and Jaafar, Ramayah, Abdul-Aziz, Saad, (2007). Ismail (2005) examines the determinants (learning organizational culture and organizational creative climate) for innovation in local organizations and multinational corporations (MNCs) in Malaysia. Jaafar et al. (2007) explores on the technology readiness among managers of Malaysian construction firms particularly in the aspect of technology innovation.

The topic of innovation has been previously investigated extensively out of the country. Most of these studies were context specific, their implementation and implication usually limited to countries and the operating environment where these studies are conducted. The lack of effort to contextualize the findings into the construction industry in the local context has advocated that there be a study aiming to overcome the existing gap. Given the above background, it is crucial to explore better understanding in the aspect of enhancing construction industry's performance that demands dynamic and innovative strategies in contributing towards greater growth. The fact that there are gaps and concerns in the construction industry particularly in the context of industry performance and innovation, an empirical study on the subject matter is mooted. This paper aims to explore the relationships between innovation and organizational performance in Malaysia's construction organizations.

2.0 INNOVATION IN CONSTRUCTION INDUSTRY

In the current global economic environment, it is vital for the construction industry to keep pace with the rapid changes of the technology and economic model that the world is heading. However, literature in innovation indicate that the construction industry has often been criticized for resisting change and for failing to adopt innovative approaches to improving performance (Yitmen, 2007). According to the National Endowment for Science, Technology and the Arts (NESTA) (2007), the construction industry is among the six "low innovation" sector along with oil production, retail banking, legal aid services, education and the rehabilitation of offenders sectors. In addition, the Third UK Community Innovation Survey conducted in 2004 revealed that construction was the worst performing industry in innovation in comparison with 11 other industries (Abott and Jeong, 2006). A survey conducted by the Australian Bureau of Statistics on innovation in Australian industries indicates that the construction industry had one of the lowest proportions of innovating businesses comparable to mining businesses and had fallen behind other industries such as manufacturing, electricity,

gas and water supply and communications (Thorpe, Neal and Charles, 2009).

Nevertheless, the indicative low innovation level of the construction industry by past researchers, according to (Panuwatwanich et al., 2008), is considered not conclusive and demands more in-depth studies. This is contributed by diverge views of scholars in defining and identifying innovation, which are distinct and in some cases irrelevant across different industries. For example, in dynamic industries such as pharmaceuticals, electronics, biotechnology and IT, product innovation is essential. It demands organizations for continuous product development in order to succeed in the intense competition and fast product evolution environment. These types of industries are research intensive industries that adopt indicators such as Research and Development (R&D) expenditures and capital investments, publications and patents as the common measures for innovation (Garcia-Morales, 2008).

On the contrary, construction industry is regarded as a highly fragmented, loosely coupled, complex and non-research intensive industry. In addition, innovation is established within a project implementation that require the involvement of varying combinations of large and small organizations from across the supply chain spectrum (Woodhead, 1998). It includes a broad representation of key players in the industry particularly among manufacturers and service providers in the process of transforming materials, knowledge and processes into buildings and infrastructures. Adopting the traditional measures of innovation in a dynamic industry such as manufacturing will not reflect the actual representation of the construction industry. Innovation in construction usually does not involve R&D investments and the introduction of new products and processes in the form of publications and patents. Hence, if such measure used in the construction industry, the outcome might result in low level of innovation. Aouad, Ozorhon and Abott (2010) supported such view and argued that innovations in the construction industry are project based and not able to be indicated as formal R&D expenditure and innovations are neither patented nor trademarked. Hence, employing the appropriate measures for assessing innovation will provide the real depiction of innovation in the construction industry. In addition, while manufacturing innovations, for example, involve resources within the organization itself for both product and process innovation, construction innovations requires the involvement of different parties from various organizations engaged directly in the construction projects. For these reasons, much of the innovation in construction remains "hidden", as it is co-developed at the project level and not at the organizational level. Project teams disband upon completion of projects while innovation typically remains within the project per se. Hence, in the construction industry, evaluating innovation at project level will provide a more objective measurement as compared to the innovation at the organizational level.

The organizational context of construction innovations as Slaughter (1998) pointed out differs significantly from a great portion of manufacturing innovations. Blayse and Manley (2004) state that construction is partly manufacturing (materials, components, and equipment) and partly services (engineering, design, surveying, consulting, and management). Similarly, Peansupap (2004) categorizes innovation in the construction industry into three; (1) Innovation in materials, equipment and methods (2) Management innovation and (3) Information Technology (IT) innovation. The first category refers to technical innovation, which can be either technical product or technical process innovation. Technical product innovation includes concrete materials, construction techniques, Industrialized Building System (IBS), robotics construction equipment, etc. This type of innovation can be either adopted by organizations or created within a particular construction project. For example, a technical project setback in construction installation has triggered a construction organization to develop an innovative construction method. A project delay may generate an innovative and efficient technique devised from existing resources.

On the other hand, management innovation is reflected by techniques and principles that are adopted to facilitate the process of management and administration of construction organization and construction projects. Value Engineering, Total Quality Management (TQM) and Lifecycle Costing are some of the examples of management innovation. Finally IT innovation is characterized by the adoption of hardware and software that are used to facilitate a more effective and efficient construction project implementation such as the Building Information Modeling (BIM), online project procurement system, project management application, RFID material testing, etc.

Evidence from past researches indicate that construction innovation is process and organization based and often characterized by the widespread adoption of new practices as a result of advances in technological and business processes (Slaughter, 1998). A case study conducted by Gil, Miozzo and Massini (2012) on Heathrow airport's T5 project stresses that innovation hinges on technology adoption decisions. Panuwatwanich et al. (2008) adopted innovation diffusion outcomes namely innovative design products, innovative design practices and advanced technology utilization as the measurement for innovation in the architectural and engineering design sector. The innovative design product is measured by elements like recognitions and awards received, flexibility for change and minimum environmental impact. The innovative design practices elements include value management, value engineering, life cycle costing and sustainable design. Examples of the elements for the advanced technology utilization dimensions are design drafting and development, integration of design information and remote collaboration.

In addition, Qi, Shen, Zeng and Jorge (2010) highlight the increasing concerns about the environmental degradation that has triggered the need for innovative construction environmental practices. They suggested to include construction sustainable design as one of the innovative products of the construction industry. Proactive environment strategies and practice adoption by project managers in mitigating the environmental impact by the company's activities is considered as one of the innovative efforts. Other studies listed several innovative initiatives such as the application of environmental friendly equipment and technologies and the investment on the environmental protection measures in construction practice (Buyse and Verbeke, 2003). In this field of study, scholars usually define such effort interchangeably between green construction and sustainable development practices. Both terms in the context of the construction industry describe as the responsibility to minimize the impact of industry's activities on environment and society. Sustainable or green related innovations include retrofitting solar, passive principles to older buildings, employing environmental awareness, surface-water management, employment of lighter and more environmentally friendly materials, and use of advanced building products.

3.0 ORGANIZATIONAL PERFORMANCE IN CONSTRUCTION INDUSTRY

Organizational performance has been the subject of studies across various industries around the world. As globalization offers both opportunities and challenges; organizations are forced to make dramatic improvements not only to compete and prosper but merely to survive (Kotter, 1996). Consequently, achieving superior performance is the ultimate goal of every organization (Bhatti, Khan, Ahmad, Hussain and Rehman, 2011). Thus, measuring and analyzing organizational performance play an important role in turning organizational goals to reality (Popova and Sharpanskykh, 2010). Moreover, when attempting to improve an industry as a whole, understanding the aspect of the performance of the organization within the industry is imperative.

Organizational performance is defined in various forms that fit in relation to the perspective and context of a study. Robinson, Anumba, Carrillo and Ghassani (2005) argue that performance should be reflected by both financial and non-financial performance. They identify market share, new customers, return on capital employed, return on investment, number of new customers and sales as the indicators for financial performance. The non-financial measures are reflected by the customer characteristics, the impact of business on society, employee or people characteristics, product performance, and process performance. Gunday, Ulusoy, Kilic, and Lutfihak (2011) support the approach in adopting both financial and non-financial aspects in measuring organizational performance but further divide them into four categories namely innovative performance, production performance, market performance and financial performance. Such approach provides a comprehensive

representation on the overall performance of an organization. Innovative performance is quantified based on the quality and quantity of new products and services introduced within an identified time frame. Production performance is defined based on production flexibility, delivery speed and cost and conformance quality. Market performance is measured based on total sale, market share, and customer satisfaction. The measurement of ROS, ROA, cash flow and organization profit are categorized in the financial performance. The first two performance categories (innovative and production) identified by Gunday et al. (2011) represent the non-financial aspects while the last two categories (market and financial) are the financial characteristics of performance.

These aspects of financial and non-financial approach in defining organizational performance can also be adopted in the construction industry. In the study conducted by Robinson et al. (2005), 85 percent of construction engineering organizations in United Kingdom (UK) used the combination of financial and non-financial measures to reflect organizational performance. The fragmented nature of the construction industry requires the involvement of various parties in completing a construction project. Such characteristic has directed the need for evaluating the final product as the indicator for organizational performance instead of examining the performance of every party involved. The construction project is the product of the construction industry and therefore, project performance which falls in one of the non-financial categories (product performance) defined by Gunday et al. (2011). Hence, it is suggested as one of the suitable dimensions for the performance indicator for the construction industry in determining the overall organizational performance.

3.1 Project Performance

Scholars defined project performance in several perspectives. For instance, the nine essential knowledge and management areas proposed by the Project Management Body of Knowledge (PMBOK) (PMI, 2008) to describe project management can be adopted as the proxy measure of project performance. The nine knowledge and management areas are (1) Integration, (2) Scope, (3) Cost, (4) Quality, (5) Human Resource, (6) Communications, (7) Risk, (8) Procurement, and (9) Time. However, according to Westerveld (2003), the PMI's definition of project management is unclear, and it is difficult to link areas and project situations in order to reflect the project performance. Furthermore, some of the areas defined are intricate to be quantified (such as the project integration and procurement) due to their subjective and intangible nature. For example, management of project integration involves the collection of processes required to ensure that the various elements of the projects properly coordinated. In order to measure the level of integration demands for evaluation of every element in the construction project implementation.

Nevertheless, Atkinson (1999), suggests that project performance in project management perspective to be defined based on the 'Iron Triangle' project success criterion; Cost-Time-Quality. These three criteria are part of the knowledge and management areas defined by PMI and have been identified and discussed in almost every literature on project performance by Belassi and Tukel (1996); Hatush and Skitmore (1997); and Blayse and Manley (2004). While cost can be measured based on the extent of deviation of the project cost from the initial project budget, quality is measured based on the quantity of non-conformance items detected during the project implementation. Quality is usually reflected by the extent of the project implementation in accordance to the set technical specifications and standards (Phua, 2004). On the other hand, time is measured based on the timely completion of the project as compared to the projection completion date. However, Low and Chuan (2006) argue that the 'Iron Triangle' conventional measures only reflect the project management performance and do not indicate the actual representation of the overall project performance. According to Almahmoud, Dolo and Panuwatwanich (2011) who conducted a study on construction projects in Saudi Arabia that there are some other important criteria involved. They included in their study three additional measurement criteria for project performance – scope; safety; and satisfaction. The scope criterion reflects the amount or value of the project variation orders. Safety is the extent of the safety of the project based on number of accidents or the number of non-conformance safety standard's reports. Satisfaction is reflected by customer satisfaction index that indicates the level of customers' satisfaction on the overall project. Besides improving the three iron-triangle aspects of performance, according to Ibrahim et al. (2010) the construction industry shall also focus on health, safety and environment of construction projects. These factors contribute to a more comprehensive representation of the performance of a construction project. The inclusion of these additional criteria for measuring construction project performance is supported by numerous scholars such as Kometa, Olomolaiye and Harris (1994); Dulaimi, Ling, and Ofori (2004); Chan and Chan (2004); Nudurupati, Arshad and Turner (2007).

Taking into account these additional aspects of project performance measure in construction industry, Chan and Chan (2004) introduced a consolidated framework for measuring project performance. They named it as project success that combines the project performance measures in construction industry proposed by researchers over the last few decades. The framework provides a comprehensive representation of the project performance that includes every aspect in project implementation namely quality, time, cost, health and safety, participant satisfaction, user satisfaction, environmental performance and commercial value. This framework establishes a complete source of performance measurement dimensions in the construction industry. Pinto, Slevin and English (2009) adopted the project performance criteria developed by Chan and Chan (2004) in their study on large construction projects in

Canada. Hence, it is suggested to use these comprehensive measures in assessing construction project performance for this study.

3.2 Business Performance

The identified project performance measures only explore on the aspect of the non-financial perspective of the organizational performance. There are researches conducted by several scholars that adopt business performance as the performance indicator in the context of financial perspective in the construction industry. For instance, research by Aragon-Correa et al. (2007) evaluate organizations' performance measures as return on assets, return on internal resources, and sales growth in their main products or services and markets. The study used the main competitor comparison as the measuring scale. Love and Holt (2000) adopted the profitability, return on investment and utilization as the performance dimension. The study by Panuwatwanich et al. (2008) defined the business performance dimension in AED firms by the elements of profit, turnover growth, market share, ability to attract new clients, and ability to gain repeat business. In addition, the study also includes project performance measure which represented by the product delivery (time, cost and quality) and client satisfaction.

Nudurupati et al. (2007) suggests that the business performance measurement in manufacturing industry can also be adapted in the construction industry that includes among others gross profit, return on asset, return on sales and sales revenue. Robinson et al. (2005) identify financial measures as market share, return on capital employed, return on investment, numbers of new customers and sales. Other studies in the context of construction industry that adopt business performance as the performance measures are those by Cheng, Ryan and Kelly (2012); Gunday et al. (2011); and Beach, Webster and Campbell (2005).

It is indicated that both financial and non-financial measures have been adopted by scholars in their attempts in examining organizational performance in the construction industry. The financial measures identified by scholars are considered relevant across many industries. In addition, project performance has been adopted by several scholars (Almahmoud et al., 2011; Pinto et al., 2009; Chan and Chan, 2004; and Atkinson, 1999) as the measures in the context of non-financial performance. Having both financial and non-financial aspects of performance will provide a more pragmatic outcome in explaining organizational performance specific to the construction industry. Hence, in this study organizational performance will constitute these two dimensions (1) project performance and (2) business performance. While the project performance examines the performance of the construction project implementation, business performance looks in the business aspect of the particular construction organizations.

4.0 THE RELATIONSHIP BETWEEN INNOVATION AND ORGANIZATIONAL PERFORMANCE

Many scholars have endorsed the importance of innovation in determining the performance of an organization (Bommer and Jalajas, 2004; Aragon-Correa et al., 2007; Garcia-Morales, 2008; Panuwatwanich et al., 2008; Chen and Huang, 2009). These studies were done across different economic sectors around the globe and relate innovation to industries' performance that further recognized the importance of innovation for an economy's success. For instance, Bommer and Jalajas (2004) claim that *"organizations with greater innovation will achieve a better response from the environment, obtaining more easily the capabilities needed to increase organizational performance and consolidate a sustainable competitive advantage"*. Garcia-Morales et al. (2011) suggest that organizations *"that concentrate on the speed of innovation gain a greater market share that produces high income and high profitability."* McMillan (2010) denotes innovation brings efficiency and effectiveness – the two main criteria influencing success for long term survival.

The study on American and European pharmaceutical firms, Garcia-Morales et al. (2008) examines the effect of innovation on performance. The study depicts that innovation introduces new knowledge that is not made available to competitors at least for a certain period. The knowledge comes in the form of capabilities, resources and technologies, and they kept within the organization that adopts the innovation that intricate competitors to imitate. Aragon-Correa et al. (2007) reiterates that organizations that adopt an innovation first can create *"isolation mechanisms"* as knowledge of the innovation is not available to competitors. Such mechanism allows the organization to maintain its competitive advantage, protect profit margins and obtain greater organizational performance.

In the construction industry environment, Panuwatwanich et al. (2008) explores the impact of innovation towards business performance in AED firms in Australia. The study concludes that innovation has a positive influence on performance. It is highlighted that in an industry where design is one of the critical elements, continually successful at developing and implementing innovation resulted in a positive perception of the organization by both clients and competitors.

These numerous studies in the innovation research field support the significance of innovation in enhancing performance as it offers better response to changing environment, gain greater market share, introduces new knowledge and established isolation mechanism for innovative organization. This highlights the fact that organizations that focus on improving innovation have a greater chance of achieving greater performance. Nevertheless, despite the many pieces of research in this field that provide evidence that the

innovation-performance relationship is positive in nature, there are also evidence on the negative impact of innovation on performance. Such phenomenon is supported by Gunday et al. (2011) who explain that the nature of innovation requires risky and expensive activities leading to increase exposure to market risk, increased costs, employee dissatisfaction or unwarranted changes that consequently provide negative impact on the overall organizational performance.

In a different study conducted by Wright, Palmer and Perkins (2005), they indicate that innovation has a positive effect only on performance only in a hostile environment but not in a benign environment for small businesses. A hostile environment is characterized by intense rivalry among firms and weak or diminishing competitive opportunities. Firms operating in highly competitive (hostile) markets are likely to be more successful innovators by increasing the number of new product introductions through incremental innovation in order to meet customer needs hence contributing to the positive impact on performance.

Such evidence indicates that there are conflicting outcomes of innovation-performance relationship studies that suggest for more research on this complex relationship. Moreover, the studies were not specific to the construction industry that further demands in-depth understanding of the aspects of performance and innovation in the construction environment in Malaysia.

5.0 RESEARCH METHOD

5.1 Research Objectives

Given the above reviews, it is crucial to explore better understanding in the aspect of enhancing construction industry's performance that demands dynamic and innovative strategies in contributing towards greater growth. Furthermore, the fact that there are gaps and concerns in the construction industry particularly in the context of industry's performance and innovation, an empirical study on the subject matter was proposed. In order to do so, innovation as the indicative determinants of organizational performance was explored and examined. Hence, this research aims bridge this gap by exploring the relationship between innovation and organizational performance in the context of the construction industry in Malaysia.

5.2 Research Framework

The theoretical framework of this research was developed based on the literature reviews of past research discussed in the earlier part of this paper. The proposed framework (Figure 1) illustrates the logical relationship between the independent and dependent variables. The dependent variable - organizational performance is described by two dimensions – project

performance and business performance. In this research, innovation is the independent variable and its impact on the organizational performance that is represented by three dimensions namely innovative design solutions, innovative project practices and advanced technology utilization is examined.

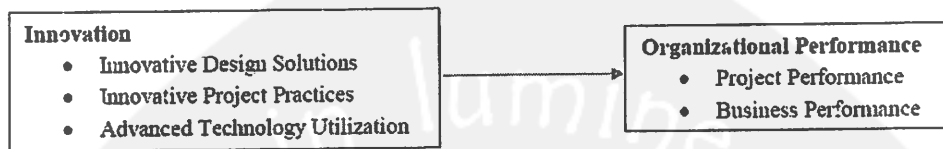


Figure 1: Research Framework

5.3 Sample Data

In Malaysia, organizations that involve in this industry are mainly contractors and consulting companies. Currently, there are 63,850 registered contractors in CIDB, and since registration with CIDB is a compulsory requirement for the contractors to practice legally in Malaysia, these numbers can be considered valid to represent the population of contractors. The registered contractors are categorized into seven grades that represent the value of construction contracts they are eligible to participate. The eligibility is based on certain technical and financial criteria set by CIDB (Table 1).

Table 1: Contractor's Grade

Grade	Maximum Contract Value
G1	Not exceeding 200,000.00
G2	Not exceeding 500,000.00
G3	Not exceeding 1 million
G4	Not exceeding 3 million
G5	Not exceeding 5 million
G6	Not exceeding 10 million
G7	No Limit

Source: CIDB, 2013

The scope of this research is confined to contractors in grade G7, G6, and G5 only as they involve in projects having a contract value of more than RM3 million. Projects below RM3 million are in the small projects category and have limited scope and complexity (PWD, 2012) and are excluded in this study - reduces the population list to 9,788 contractors. Table 2 below provides the summary of the population frame.

Table 2: Population Frame

Organization	Source	No. of Registered Organizations
G7 Contractors	CIDB	4,573
G6 Contractors	CIDB	1,398
G5 Contractors	CIDB	3,817
Engineering Consultants	BEM	2,198
Architectural Consultants	BOA	1,609
Quantity Surveyor Consultants	BQSM	339
TOTAL		13,934

Source: CIDB (2013)

On the other hand, the list of the Board of Engineers of Malaysia (BEM), reported 2,198 registered private engineering consulting companies in Malaysia. These companies are categorized based on their engineering disciplines namely civil, mechanical and electrical engineering. Board of Architect, (BOA) registered 1,609 architectural consulting companies and 339 quantity surveyors consulting companies that are currently in the list of the Board of Quantity Surveyor (BQSM). The organizations mentioned above will be the population of this research. According to Sekaran (2007), considering the size of the total population of 13,934 the number of samples required to represent the whole population is 375. Therefore, a minimum of 375 organizations is required as the research sample. These sample organizations were selected from the population list based on the multi-staged stratified samplings in strata of contractors and consultants provided by CIDB, BEM, BOA and BQSM. These stratified groups were further divided into subgroups based on their categories characterized by the relevant professional bodies and is illustrated in Figure 2 which allow for a realistic representation of the total population of this research that consists of all relevant stakeholders of the industry.

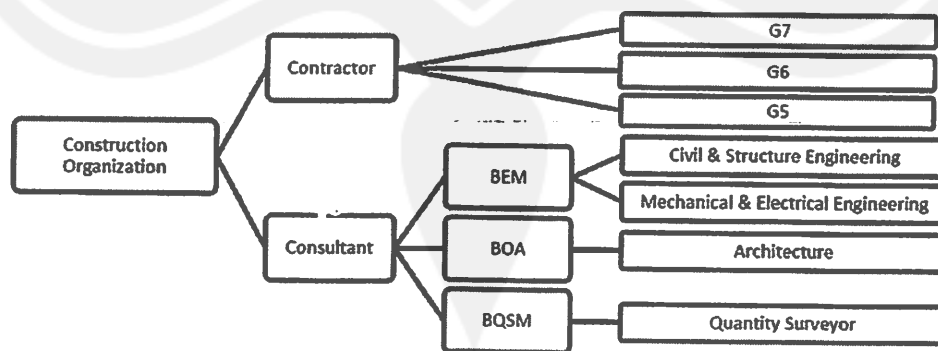


Figure 2: Stratification Stages

The population was first stratified into two groups namely contractor and consultant. The two groups were further stratified into more specific groups of which contractors were stratified based on the CIDB registration categories – G5, G6 and G7 contractors and consultants were stratified into engineering (registered with BEM), architecture (registered with BOA) and quantity surveyor (registered with BQSM) discipline. Engineering consultant is further divided into two major disciplines – (1) civil and structure engineering, (2) electrical and mechanical engineering. Figure 2 illustrates the stratifications of the population.

A set of questionnaire survey was developed to elicit the responses of the respondents of this research. The data collection was conducted in the traditional personally administered approach whereby respondents are given a hard copy form of questionnaire and monitored face to face during the survey sessions. Selections of respondents among the stratified groups were then based on a simple random sampling method and a total of 378 responses were received.

5.4 Variables and Measures

5.4.1 Organizational Performance

The survey method was adopted in order to gather responses from the sample determined above. In this study, organizational performance is the dependent variable. It consists of two dimensions that are (1) project performance and (2) business performance. Each dimension consists of several statements that represent the elements of the respective performance indicators. Dess and Robinson (1984) assert that there is a high correlation and concurrent validity between objective and subjective data on performance, which implies that both are valid when calculating an organization's performance. Hence, perceived measures of performance can be a valid substitute for objective performance measure and is adopted in determining the organizational performance in this research. For example, the elements of the business performance assess the respondent perception of the level of the performance of their organizations' as compared to their competitors.

Table 3: Summary of Organizational Performance Measures

Dimension	Elements	Adapted From
Project Performance	Quality	Chan and Chan (2004), Atkinson (1999), Almahmoud et al. (2011), Pinto et al. (2009)
	Timeliness	
	Cost	
	Scope	
	Safety and Health	
	Environment	
	Participant's Satisfaction	
	User/client's Satisfaction	
	Value	
	Overall Success	
Business Performance	Profit Growth	Panuwatwanich et al. (2008) Gunday et al. (2011)
	Turnover Growth	
	Market share	
	New clients	
	Repeat business	
	Level of customer satisfaction	
	Overall reputation	

Table 3 summarizes the operationalization of the organizational performance. Project performance dimension measurements are adapted from the work by Chan and Chan (2004), and Almahmoud et al. (2011). The questions were adapted from the study by Pinto et al. (2009) which include the environment and safety elements which bring to a total of ten items. The questions reflect elements of (1) Quality (2) Timeliness (3) Cost (4) Scope (5) Safety and Health (6) Environment (7) Participant's Satisfaction (8) User/client's Satisfaction (9) Value (10) Overall Success.

Business performance, on the other hand, reflect elements of (1) Profit growth (2) Turnover growth (3) Market share (4) New clients and (5) Repeat business (6) Level of customer satisfaction (7) Overall reputation. The elements will be compared and rated against the organization's competitors over the last three years. These measurement constructs are adapted from the study by Panuwatwanich et al. (2008) and Gunday et al. (2011).

5.4.2 Innovation

The instrument for measuring innovation in this study combines dimensions from several studies in the field of innovation specific to the construction industry environment. They were adapted from Bossink (2002), Dubois and Gadde (2002), Blayse and Manley (2004), Dewick and Miozzo (2004), Peansupap (2004), Panuwatwanich et al. (2008), and Qi et al. (2010). The instrument mostly adapted the constructs by Panuwatwanich et al. (2008) which categorizes them into three dimensions which are (1) Innovative Design Solution, (2)

Innovative Project Practice and (3) Advanced Technology Utilization. The dimensions included the whole aspects of construction project implementation that is not only the design aspect. The innovation design solution refers to the degree of the design innovativeness of the construction project. Although it relates much to the construction design aspects, it is adapted to include the involvement of contractors during the implementation stage. The innovative project practice dimension refers to the value-added process, which aims to enhance the project performance. The advanced technology utilization dimension refers to the adoption of advanced technology during the project implementation. Table 4 summarizes the variables represent every dimension along with the associated adopted reference.

Table 4: Summary of Innovation measures

Dimension	Elements	Adapted From
Innovation design solution	Recognition and awards Flexibility of the design Environmental sustainability New and established recognizable design	Panuwatwanich (2008) Qi et al. (2010) Peansupap (2004)
Innovative project practice	Value management Value engineering Life cycle costing Constructability review Sustainable design/construction Total Quality Management	Panuwatwanich (2008) Qi et al. (2010),
Advanced Technology Utilization	Advanced design drafting techniques Advanced project procurement system Advanced project monitoring tools Advanced technical products Advanced construction techniques Environmental friendly equipment and products Advanced ICT application	Panuwatwanich (2008) Peansupap (2004) Blayse and Manley (2004) Dewick and Miozzo(2004) Dubois and Gadde (2002) Bossink (2002)

6.0 ANALYSIS AND FINDINGS

The data collected from the surveys were analyzed using Statistical Package for Social Sciences (SPSS) Version 16.00 statistical software. Regression analyzes were performed to analyze the relationships between two or more variables with dependent variable (multiple regressions), in this case, the relationships between innovation and organizational performance.

The underlying assumptions of the linear regression, which are linearity, normality and homoscedasticity were tested in continuous data used for the regression analysis. Linearity was assessed by analyzing the scatterplots of the variables while histogram and skewness data were used to detect the normality of the variables. The consistent variance of the error

term is associated with homoscedasticity. Homoscedasticity assumes that the dependent variable exhibits equal levels of variance across the range of predictor variables (Hair, Black, Babin, Anderson and Tatham, 2006). To determine if a relationship is homoscedastic is to analyze the scatterplot of the variables on the x-axis and the variable's residual on the y-axis. The scatter plot that displays a specific pattern indicates homoscedasticity was met.

Analyzes on the relationship between innovation and organizational performance were separately conducted based on the three defined dimensions of innovation and two dimensions of organizational performance. The r^2 value and the Beta coefficient, as well as its significance, were analyzed and examined on all of the dimensions relationships as indicated in Table 5.

Table 5: Innovation and Organizational Performance

r^2	Project Performance			Business Performance		
	Std. Error of the Estimate	Sig. F Change	Durbin-Watson	Std. Error of the Estimate	Sig. F Change	Durbin-Watson
	0.87581	0.000	1.824	0.921201	0.000	1.815
Variable	B	Std. Error	Sig.	B	Std. Error	Sig.
(Constant)	0.006	0.049	0.896	-0.022	0.051	0.673
Innovative Design Solution	0.119	0.054	0.029	0.048	0.057	0.405
Innovative Project Practice	0.199	0.053	0.000	0.184	0.056	0.001
Advanced Technology Utilization	0.094	0.051	0.067	0.199	0.054	0.000

The dimensions of innovation namely innovative design solutions, innovative project practices, and advanced technology utilization have been identified by the outcome of this study to have significant influence on at least one dimension of the organizational performance. Innovative project practices dimension is found to have significant influence on both project and business performance positively. On the other hand, while innovative design solution is found to significantly influence project performance, advanced technology utilization is indicated to influence significantly business performance positively also. Table 6 provides the summary of the analysis outcomes.

Table 6: Summary of Analysis

Significant Relationship	
1.1	Innovative Design Solution – Project Performance
1.2	Innovative Project Practice – Project Performance
1.3	Innovative Project Practice – Business Performance
1.4	Advanced Technology Utilization – Business Performance
Insignificant Relationship	
2.1	Advanced Technology Utilization – Project Performance
2.2	Innovative Design Solution – Business Performance

6.1 Innovative Design Solution on Organizational Performance

The outcome of this study indicates that innovative design solution is significant in influencing project performance. The finding is consistent with the past study by Panuwatwanich (2008) which described the construction industry as “*where design is one of the critical elements, continually successful at developing and implementing innovation resulted in a positive perception of the organization by both clients and competitors*”. Hence, justifies the significance of innovative design solutions on project performance.

However, it is found in this study that innovative design solution does not influence business performance. The relationship between innovative design solution and business performance that is not significant can be justified by the fact that innovative design in a construction project involves changes in the technical aspects that require endorsement by the relevant competent professionals. They are responsible for every design they endorsed and are held liable for any incident of fault due to a design error. As a result, the innovative design solution may lead to increase costs due to the demand for new expertise, introduction of new processes and exposure to higher risks; that consequently affects the organization’s profit margin. The outcome of the findings of this study is also supported by a study by Gunday et al. (2011).

6.2 Innovative Project Practice on Organizational Performance

The main objective of innovative project practices is to introduce greater effectiveness in construction project implementation. This is very crucial as many scholars highlighted the poor performance of the industry in terms of fulfilling the project performance criteria (Abdul Rahman et al., 2006, Ibrahim et al., 2006, Chan et al., 2003). The elements of project practices such as value management, value engineering, total quality management, sustainable design, constructability review and life cycle costing are proven in this study to have positive impact on the organizational performance. For example, the value engineering practice is aimed to increase the value of a construction project by improving the function of

the components of the project. This can be reflected in the positive outcome of the project performance as such approach relatively reduces the project cost by improving project scope. The constructability review for instance aimed at facilitating efficient use of construction resources in terms of equipment, material and labor that will be reflected in improved business performance. This shows that consistent application of innovative project practices allows for organizations to achieve organizational performance both in the aspect of project and business performance. Hence, explains the outcome of this research.

6.3 Advanced Technology Utilization on Organizational Performance

Advanced technology utilization is revealed to have a significant influence only on the business performance of construction organization but not on project performance. In comparison with the innovative design solutions, utilizing advanced technology generate lesser uncertainties as such innovation initiative involves adopting available technologies into the organization. Prior to the decision to utilize an advanced technology, an organization has the opportunity to evaluate the technology. These technologies may have been successfully implemented by other organizations and the possible effects on an organization to adopt such technology can be evaluated and hence reduces the possible risks. Consequently, the aim for utilizing a new technology is to develop efficiency and effectiveness that eventually leads to greater business performance. Chan and Sundaraj (2007) support the outcome of this study by highlighting the ineffectiveness and low productivity of organizations in construction industry are caused by the failure of the industry to utilise the new, as well as other relevant labour-reducing technologies.

In the context of project performance, according to Mitropoulos (1999) the benefits of technological innovation depend on the extent to which these technologies are used. Advanced technologies aim to offer more efficient and effective approaches in project implementation which provide the means for construction organization in achieving superior project performance. However, new technologies demand skills and expertise in using them and without such expertise the technology may not be utilized appropriately which leads to delays, high accident cases, technology breakdowns and material wastages that will ultimately jeopardize project performance. Furthermore, the positive effect of adopting new technology is mostly reflected the organization in the long run. However, in short-term, adopting a new technology requires an increase in project cost, as it demands capital expenditure in purchasing such technology and employing technology experts that reflect the overall project performance of the current project. Hence, explains that utilizing advanced technology does not necessarily lead to achieving superior project performance that is the outcome of this study.

7.0 CONCLUSION

By drawing attention to the aspects of innovation and uncovering the mechanisms for enhancing organizational performance, this study sheds additional light on the implications of fostering innovation within the construction industry context. This study highlights the importance of organizations in this industry to focus on promoting innovation as it is critical in determining both project and business performance. The significance of innovation in influencing organizational performance provides a new phenomenon in the industry that has been labeled as matured and delayed in the innovative effort. Although there is an increasing awareness of the importance of innovation, to date studies on it in Malaysia are very scarce. The Malaysian environment and industry setup of this research provide relevant knowledge for future studies for cross-cultural and cross-industry comparison on innovation.

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Does Product Innovativeness Strengthen the Effect of Strategic Orientation on Performance?

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Abstract

Product innovation opens up new markets, creates competitive advantage over competitors, and enhances economic performance of the technological firms. Despite the widely acknowledged importance of product innovation to organizational performance of technological firms, prior attempts have not generated sufficient understanding of how product innovativeness may strengthen the performance outcome of strategic orientations. Moreover, moderating effect of product innovativeness on the relationship between strategic orientations and performance has received scant attention, although direct and mediating effect of product innovativeness on firms' performance has been well-researched in relation to organizational performance. To fill this research gap, this study proposes a conceptual model to test and examine (1) the direct effect of market orientation, and technology orientation on organizational performance, and (2) the moderating effect of product innovativeness on market orientation-performance and technology orientation-performance relationships. This study contributes to innovation and strategic management literature in two ways. First, unlike most prior research, which examines product innovativeness as a dependent or mediating variable, this study conceptualizes it as a moderating variable. Second, it unearths the contingent role of product innovativeness that accentuates the impact of strategic orientation on performance, while substantiating the impact of strategic orientations on performance. This study offers theoretical and practical contributions by advancing a new conceptual model that gives potential avenues for further empirical research.

Keyword: Product Innovativeness, Strategic Orientation, Market Orientation, technology orientation, Performance

1. Introduction

Strategic behaviors and strategic orientations of organizations have been well regarded as vital factors to the organizational performance in strategic management literature. In support of this, significant body of literature has shown the empirical evidence on the positive effect of strategic orientations such as market and technology orientation on organizational performance (Grinstein, 2008; Kirca, Jayachandran, & Bearden, 2005; Gatington & Xuereb, 1997). A meta-analysis on 23 countries conducted by Cano, Carrillatb and Jaramillo (2004) suggests that relationship between market orientation and business performance is positive and consistent worldwide. Although positive effect is the common research finding, a handful of studies did not find positive link between strategic orientation and performance (e.g., Mutlu, & Aksoy, 2014). The inconsistent finding could be due to other environmental or organizational factors that affect the firms differently in different industries. At this point, it is still questionable what factor moderates the effect of strategic orientation on performance.

Although most of the strategic orientation studies have empirically tested moderating effect of external or environmental factors such as demand uncertainty, competitive intensity (Gao, Zhou, Yim, 2007; Zhou & Li, 2007), only limited studies have explored that of organizational factors. Given that product innovation is one of the most important organizational factors that have great impact on commercial returns of organizations since it leads to competitive advantage by differentiating one's product from others, this study proposes a conceptual model that would address the research question— *Does product innovativeness strengthen the effect of strategic orientations on performance?*

The contingent role of innovativeness is more pronounced in the case of technological firms that compete on the ground of product differentiation. If a firm is more innovative in terms of new product introduction, their effort in market research to understand the market and keeping themselves at technological edge will be paid back with financial returns. In other words, their market and technology orientations will be able to contribute better to organizational performance if they are more active in new product development and commercialization.

Moreover, prior literature has tested the mediating role of product innovativeness (e.g., Chang, Franke Butler, Musgrove & Ellinger, 2014; Lee, Choi & Kwak, 2014), but not the moderating role of innovativeness on strategic orientation and performance link. In view of literature gaps and the importance of product innovativeness, this study advances a conceptual model that proposes that product innovativeness moderates the effect of strategic orientation on organizational performance. Therefore, the objective of this paper is to propose

a conceptual model with a set of propositions that would provide a better understanding of how product innovativeness helps strengthen performance outcome of strategic orientations.

2. Literature Review & Propositions

2.1 Strategic Orientation

Strategic orientation is defined as the “strategic directions implemented by a firm to create the proper behaviors for the continuous superior performance of the business” (Gatignon and Xuereb, 1997; Narver and Slater, 1990). Strategic orientation towards market and technology should be embedded in a technological firm’s organizational culture to be able to strategically position itself as a market leader. Among the strategic orientations, market orientation has gained substantial attention in organizational performance studies, whereas, technology orientation still needs more research attention on its relationship with organizational performance.

This conceptual model of this study is based on the view that a market and technology-oriented organizational culture is a prerequisite for better organizational performance that depends also on how the firm turns market opportunities into new products that fit the market and generating sales from the products. In other words, this study proposes that the firm's ability to constantly seek market and product opportunities for creating new products with superior value for its customers will result in better commercial returns.

2.2 Market Orientation and Performance

A business that increases its market orientation will improve its market performance (Narver & Slater, 1990). Market orientation has been conceptualized as organizational culture as well as behavior that place the understanding and meeting customer needs at the center of the firm's business model to create superior value for buyer and continuous superior performance for the business (Narver & Slater, 1990; Kohli, & Jaworski, 1990). Prior literature has proven that *customer orientation* and *competitor orientation* are major components of market orientation vital to firm’s superior performance. *Customer orientation* is the sufficient understanding of one's target buyers to be able to create superior value for them continuously to create an "augmented product (Narver & Slater, 1990; Levitt 1980). *Competitor orientation* means a seller understands the short-term strengths and weaknesses and long-term capabilities and strategies of both the key current and the key potential competitors (Narver and Slater, 1990; Aaker 1988; Day and Wensley 1988). Narver and Slater (1990) suggest that customer orientation and competitor orientation include all of the activities involved in acquiring information about the buyers and competitors in the target market and disseminating it throughout the departments in an organization to create superior value for the buyers.

Although the majority of empirical studies report a positive relationship between market orientation and business performance (e.g., Kirca et al. 2005, Baker and Sinkula 2009) the extant literature is not entirely consistent and there are also reports of non-significant or even negative associations (Huhtala, Sihvonen, Frösén, Jaakkola & Tikkanen, 2014; Kumar, Jones, Venkatesan, & Leone, 2011; Greenley, 1995).

Notwithstanding the literature findings, it has been commonly understood that firms with a customer orientation generate intelligence about the current and future needs of targeted customers and employees within a customer-oriented organization are aware of who their customers are and what kind of needs and problems they have. Market-orientated firms are also quick to share the new information with other individuals and departments within the organization to ensure that the firm can continue to keep pace with customer needs, and anticipate future needs. In addition, the market intelligence as the result of market orientation allows the firm to identify potential new customers and new market along with new products as opportunities to create value and satisfaction for the customer. Consequently, business performance of the firms will be improved as the result of satisfied customers who support the business as loyal customers. Based on this contentment, this study hypothesizes as follow.

P1: Market orientation has positive effect on market performance.

P2: Market orientation has positive effect on product performance.

P3: Market orientation has positive effect on financial performance.

2.3 Technological Orientation and Performance

The notion of technology orientation has not gained sufficient attention in studies related to organizational performance although it has been proven to be the determinant of product innovativeness of the technological firms by some studies (e.g., Gatignton & Xuereb, 1997; Salavou, 2005). Gatignon and Xuereb (1997) first introduced the concept of technology orientation, suggesting that technology-oriented firm advocates a commitment to R&D, the acquisition of new technologies, and the application of the latest technology and also that product differentiation from the competition or cost advantages in production can be achieved by developing and adapting new technologies. Several studies have supported that technology orientation improves business or new product performance (e.g. Day, 1999; Gatignon & Xuereb 1997; Zhou, Yim & Tse, 2005). However, there are a few studies that do not support positive effects (Gao et al., 2007).

In another sense, technology orientation could be associated with a firm's behaviour to respond to "technological push" that triggers technologically superior products and services. Therefore, technology-oriented companies are more influenced by technology push or new

technologies than other companies and tend to respond to the technology push by developing and commercializing new products earlier than competitors. Based on this view, this study posits as follow.

P4: Technology orientation has positive effect on market performance.

P5: Technology orientation has positive effect on product performance.

P6: Technology orientation has positive effect on financial performance.

2.4 Organizational Performance

A strategically orientated firm can enjoy the outcomes of strategic orientations in terms of financial returns such as increased sales and profit, market performance such as customer satisfaction, and increased market share, and product performance such as product differentiation, product leadership. Therefore, this study posits that strategic orientation will result in three kinds of organizational performance— financial, market and product performance.

2.5 Moderating Role of Product Innovativeness

Innovativeness is defined as the capacity to introduce some new process, product, or idea in the organization (Damanpour, 1991; Hurley & Hult, 1998). Increasing competitiveness in technological markets has pushed the firms to pursue innovative product strategies that generate superior levels of product quality, features, and variety. Technological firms have no choice but to create new products in creating superior value to buyers. The concept of market orientation lies on creating superior value to buyers and Narver and Slater (1990) suggest that a seller creates value for a buyer in only two ways: by increasing benefits to the buyer in relation to the buyer's costs and by decreasing the buyer's costs in relation to the buyer's benefits. However, the authors did not explain how to increase benefits and decrease the cost. In view of this gap, this study contends that product innovation by means of new product development and commercialization is a way of creating superior value to both existing and potential buyers because new product which is developed based on market orientation usually satisfies the customers. In support of this view, Ngo and O'Cass (2012) suggest that realizing the performance impact of marketing orientation depends on how well marketing and innovation functions co-align with market orientation. Therefore, the firm's ability to create superior performance by being market-oriented could be contingent on its level of product innovativeness. In other words, product innovativeness of the firm positively moderates the relationship between strategic orientation and organizational performance. Based on this view, this study posits as follow.

P7: The greater the level of product innovativeness, the greater the effect of market orientation on product performance

P8: The greater the level of product innovativeness, the greater the effect of market orientation on market performance

P9: The greater the level of product innovativeness, the greater the effect of market orientation on financial performance

Moreover, innovative firms are more technology-orientated and are more proactive in acquiring new production technologies, and employ such technologies for developing new products that could generate commercial returns. Therefore, if a firm is innovative, the performance outcome of technology orientation could be higher. In this view, this study argues that product innovativeness of a firm moderates the relationship between strategic orientation and organizational performance. Therefore,

P10: The greater the product innovativeness, the greater the effect of technology orientation on product performance

P11: The greater the product innovativeness, the greater the effect of technology orientation on market performance

P12: The greater the product innovativeness, the greater the effect of technology orientation on financial performance

3. Proposed Conceptual Model

Due to lack of literature on moderating role of product innovativeness on strategic orientation-performance link, whether the effects of strategic orientations are robust across various level of product innovativeness remains an open issue. To fill this research void, this study advances a conceptual model that illustrates the hypotheses as shown in Fig.1. The model holds that market and technology orientations have positive effect on performance, and product innovativeness positively moderates strategic orientation-performance link.

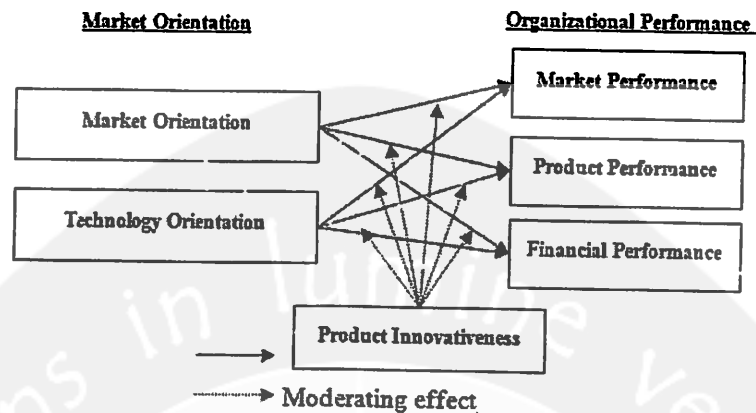


Fig. 1: Conceptual model

4. Conclusion

Given the scarcity of studies in the field of technological firms' strategic orientation, questions remain to be answered regarding what strategic orientation contributes to financial, market and product performance and what factors really accentuate such contribution. Addressing the foregoing knowledge gaps in the literature and the need for a unifying model that captures the important moderating factor, this study makes important theoretical contributions. First, the research proposes a conceptual model that moves away from common approach of proposing product innovativeness as a mediating variable between strategic orientation and performance. Proposing the moderating effect of product innovativeness opens the possibilities for further research in extending the role of product-related factors in strengthening the effect of strategic orientation on organizational performance. Second, the research incorporates three kinds of organizational performance that gives clearer picture of how each relationship exists. The identification of three kinds of performance advances the literature on organizational performance because most of the studies explore financial performance.

Beside the contributions, this study is subject to limitations and consequently leaves opportunity for further research. First, we study three types of strategic orientations: customer, competitor, and technology orientations. Future research may include other viable strategic orientations, such as learning orientation and entrepreneurial orientation. Moreover, further empirical studies are required to test the proposed conceptual model and map out patterns of strategic behavior in various industries and contexts.

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Brokerage Activities in Regional Innovation Networks: The Case of Daegu Technopark in Korea

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Abstract

This paper examines the concepts of local clusters and regional innovation networks and discusses the significance of 'network brokerages' in issues of local economic development and governance. The brokerage activities particularly affect the linkage structures and characteristics of regional networks. This research discusses each of these features in turn, and develops structural, divisional, or procedural models of them. The paper then turns to the empirical examples of brokerage activities by *Daegu Technopark* to illustrate the ways in which a local broker and related actors have been functioning. The analysis of *Daegu Technopark* case indicates that the positive results of network brokerages are mainly due to the proximity and willingness of a network broker to local firms, the making and operation of public programs suitable to local conditions, differentiation to linkage purposes, the provision of contact opportunities, flexible maneuvering and consensus building efforts, and an active-minded leadership applicable to the circumstances. It is, of course, apprehended that *Daegu Technopark* shows some signs of potential limitations in the grasping and activating processes of regional potentials, such as a discontented aspect of managerial capability, a budgetary deficit, and a distorted process of performance evaluation system.

1. Introduction

In the present knowledge-based economy, economic success and competitiveness is critically dependent on innovation. The innovation environment of regions is, however, facing new and unavoidable challenges by global competition under the rules of unlimited competitiveness (Porter 1990, 2000; Malecki 2002). The traditional industrial policy has mainly focused on promoting innovation by the science and technology push effects. Innovation is, however, seen to be as much a social as a technical process. Innovations are seen to emerge as dynamic processes deeply embedded in social and economic activities, and as processes of interactive multi-actor learning (Krugman 1991; Lundvall 1992). It thus seems a crucial task for regional innovation networks to take advantage of an interactive multi-actor environment.

The concept of regional innovation networks has recently gained substantial interest from scholars, policy-makers and professionalized service providers. Regional innovation-inspired thinking has influenced a wide range of academic research in urban and regional studies and industrial policy analysis. Theoretical and empirical studies have usually confirmed the importance of regional innovation networks under the present economic development paradigm. A good overview of the general notion of regional innovation systems and the associated policy implications are to be found in Cooke et al. (1997), Tura and Harmaakorpi (2005), and Kallio et al. (2010). Porter (1990, 2000) provides an extensive analysis of industrial clusters in support of cooperation and competitiveness. Most attention has been directed toward new industrial spaces (Storper 1986, 1995, 1997), interactive learning and innovative milieu (Lundvall and Johnson 1994; Maillat and Lecoq 1998; Capello and Faggian, 2005). As processes of networked cooperation, the creation of local voluntary associations (Hirst 1994), social capital (Putnam 1993, 2000; Ostrom and Ahn 2007; Lowndes and Pratchett 2008), associative governance (Cooke and Morgan 1998), entrepreneurial social infrastructure (Flora and Flora 1993; Flora et al. 1997; Feldman and Zoller 2012), structures of ongoing social relation (Granovetter 1985; Grabher 1993), and collective and consensual endeavour (Tödtling and Trippel 2004; Kauffeld-Monz and Fritsch 2013) are emphasized. These approaches are partly overlapping, but each shows a different contribution in analyzing regional innovation networks.

Regional innovation networks are formed from a heterogeneous group of various actors including representatives of firms, universities, research centers and development organizations. Evidence gleaned from many studies indicates that regional multi-actor innovation networks are of great importance for regional innovation and competitiveness. However, it is still far from clear what kind of policies or strategies should be used to promote such networks. In this paper, brokerage activities are presented as a way for regional innovation networks.

The purpose of this paper is to examine the nature and function of brokerage activities in regional innovation networks and their utility as a way of local networked cooperation. It explores the dynamics of brokerage activities in the study of competitive regions and the wider implications of related theories in the era of globalization and localization. The paper starts by delineating the research backgrounds. It outlines current thinking on the nature of regional innovation networks and the implications for economic development and regional competitive advantage. A second section explores the nature and characteristics of competitive regions and introduces the ways in which network brokerage activities contributes to the competitiveness of a region. It examines the concepts of local clusters and regional innovation networks and discusses the significance of 'network brokerages' in issues

of local economic development and governance. The paper then turns to the empirical examples of brokerage activities by *Daegu Technopark* to illustrate the ways in which a local broker and related actors have been functioning. A following section then raises questions about the practicability of network broker and suggests the policy implications.

2. Competitive Regions?

In what sense are some places competitive, while others are not? The competitiveness of places refers to the ability of the local economy and society to provide an increasing standard of living for its inhabitants (Malecki 2000). The competitiveness of regions, therefore, refers to the ability of the regional economy to be 'sticky' or to attract both investment and talented migrants – to sustain their attractiveness to both labor and capital (Markusen 1996, 293). This ability is seen as the sum of the actual and potential resources embedded within and available through the regional economy.

Innovative capability is widely considered to be the driving force in building regional competitive advantage. 'Regional innovative capability' that is shared by a group of firms and based on their interaction is formed from innovative capability of individual actors and innovation networks taking part in the regional innovation system (Tura and Hamaakorpi 2005, 1112). Many advantages of regional innovative capability rest on external economies or spillovers across firms, industries, and institutions of various sorts. Therefore, regional innovative capability is more than the innovative capabilities of individual firms. Indeed, the focus of attention from individual firms to the system level has been based upon a new perception of public intervention. Traditional roles of governments like building physical infrastructures have been complemented by new tasks like building social capital and strengthening networking and innovation. Less direct intervention and more indirect activation has been at the core of the new trend.

The new trend emphasizes the importance of 'untraded interdependencies' in the innovative processes, which are now understood to be the basis of dynamic clusters and for technological learning (Porter 1990, 2000; Martin and Sunley 1996; Storper 1995, 1997; Kauffeld-Monz and Fritsch 2013). They place demands on building a regional innovation environment.

2.1 Local Clusters

As Porter (2000) admits, the idea of the externalities of specialized industrial locations is hardly new. As is well-known, Alfred Marshall, writing at the end of the 19th century, included an intriguing topic in his *Principles of Economics* (1890/1920) on 'the concentration of specialized industries in particular localities'. A cluster is a geographically

proximate group of interconnected companies and associated institutions in a particular field that compete but also cooperate. It is a concentration of highly specialized skills and knowledge, institutions, rivals, related businesses, and sophisticated customers in a particular place. Proximity in geographic, cultural, and institutional terms allows special access, special relationships, better information, powerful incentives, and other advantages in competitiveness (Porter 2000; Boschma 2005).

Even as old reasons for clustering have diminished in importance with globalization, new influences of local clusters on competition seem to be particularly important in environments where information is imperfect, rapidly changing, and not easily codified, key features of many knowledge-based and dynamic economies. The approach of local clusters represents a new way of thinking about local economies, and it necessitates new perceptions for firms, for various levels of governments, and for other institutions in enhancing competitiveness. For firms, a good deal of competitive advantage lies outside firms and even outside their industries, residing instead in the locations at which their business units are based (Porter 2000, 16). The public-sector enters in supporting (or hindering) the growth of clusters in many ways and has become part of the social environment of local clusters. In particular, public-sector investment may have a crucial role to play in 'kick-starting' certain cities and regions onto specific trajectories of economic development. In addition, government laboratories and research institutes may play a particularly significant role in providing the skill and science base for the growth of a local cluster (Leibovitz 2004, 1135-1136).

As Cooke (1998) notes, the core recipe of local clusters lies in the relationships between competition and cooperation. Vigorous competition between firms occurs in winning customers and making profits. Cooperative relations between firms may be one way for firms to become increasingly innovative as a means of sustaining competitive advantage (Porter 2000). The existence of a cluster thus seems to make such relationships more likely to develop and become effective, but they are far from automatic. Formal and informal organizing mechanisms and cultural norms may play an important role in the functioning and development of clusters.

Storper (1995, 192, 210) specifically emphasizes the importance of 'untraded interdependencies' between firms for the success of new industrial spaces and local clusters. These consist of rules, routines and networks which are perhaps the mysterious 'synergy' identified previously in many successful places. The interdependencies generate region-specific material and non-material assets in enhancing productivity. Geographic proximity, accessibility and agglomeration provide a powerful influence on the interdependencies, and this interaction is often played out within a regional arena (Howells

1996). Yet, focusing exclusively on endogenous characteristics may represent an inadequate explanation for the success or failure of regions. Regions are constructed by interactive sets of social, economic, and political relations, operating differentially across space (Massey 1995; requoted in Raco 1999, 963)

In sum, local clusters have succeeded in overcoming the traditional industrial policies like building industrial districts, but they have been less capable of doing the next step – i.e. ensuring that social system building takes place. There is no indication that public and private partners bundle their knowledge and resources and cooperate in defining strategies for the whole system. Hence selective communication, a collective reflexivity, the shaping of a common identity as essential operations of system building are only weakly developed at the cluster level (Tödtling and Trippel 2004, 1191).

2.2 Regional Innovation Networks

In the present Schumpeterian world, innovation is widely seen as a central driving force of economic growth and competitiveness. As Archibugi and Michie (1995, 1) state, ‘the production and use of knowledge is at the core of value-added activities, and innovation is at the core of firms and nations’ strategies for growth’. Innovation is not created in a social vacuum. As an interactive process, it takes place in a particular social, structural and cultural environment. In order to understand the conditions of innovation in the local economy, its properties as a type of behavior and interaction need to be identified. Nowadays, innovation is seen to emerge as a non-linear process deeply embedded in ordinary social and economic activities, and as a process of interactive learning between firms and their environment (Lundvall 1992; Asheim 1999; Capello and Faggian 2005).

In non-linear innovation processes, multidirectional information flows are critical to create and develop knowledge and technology. The significance of routines and conventions for multidirectional information flow is generally summarized in the concept of *social capital*:

Whereas physical capital refers to physical objects and human capital refers to properties of individuals, social capital refers to connections among individuals – social networks and the norms of reciprocity and trustworthiness that arise from them. In that sense social capital is closely related to what some have called “civic virtue”(Putnam 2000, 19).

A non-linear innovation is a consequence of various learning processes embedded in social and economic activities, where different kinds of actors are involved. The traditional development models focus on a ‘snapshot’ (static nature) of economic linkages and they neglect the historical and cumulative nature of economic change (Krugman 1996; Martin and

Sunley 1996). Existing industrial structures reflect forces of inertia, previous investment decisions, the incremental accumulation of a certain set of skills and the exploitation of specialized local labor markets, and 'critical junctures' in the economic history (Leibovitz 2004, 1135). More recent evolutionary interpretations, such as those of Dosi (1988), Arthur (1994), Storper (1997), and Martin and Sunley (2006) have stressed the uncertainty and path-dependency of innovations. In the innovation processes, it is often extremely difficult to know the future consequences of the decisions and choices made. Innovation is viewed as an interactive social process, characterized by a particular social division of labor within a firm and between different firms of the value chain, as well as between firms and universities and governmental research institutes. This process is characterized by continuous feedback from various stages of the value chain (Bathelt and Glückler 2003, 135).

The innovation processes, which are social, non-linear and interactive learning processes, suggest the significance of a socio-institutional environment. Thus, regional innovation is understood as a locally embedded process taking place within the regional innovation environment (Tura and Hamaakorpi 2005, 1113). Furthermore, the approach of a regional innovation system stresses socio-institutional factors for innovation by pointing out two sub-systems: one for knowledge generation and diffusion and the other for knowledge application and exploitation (Autio 1998). The first sub-system is mainly composed of research and development organizations, education and technology transfer. The second sub-system is made up by the firms and the vertically and horizontally related entities. For a dynamic innovation process, both well developed sub-systems of knowledge generation and diffusion are required (Tödtling and Trippel 2004, 1177).

Regional innovative network not only promote knowledge flows that are based on direct relations, but also it can contribute to knowledge diffusion by indirect links (Kauffeld-Monz and Fritsch 2013, 670). It means the joint innovation network of the firms and other organizations of the region. Thus, it is often made up of heterogeneous networks of various groups, including representatives of firms, universities, technology centers and development organizations. Following Teece and Pisano (1998), 'innovative network' is defined here as a network to respond to the changes in the environment and exploit existing resources and competencies in order to create competitive advantage by innovation activities. Consequently, the term 'regional innovative network' refers to the network to exploit and renew the existing resource configurations of the region in order to create a sustainable competitive advantage by innovation activities in the constantly changing environment (Tura and Hamaakorpi 2005, 1114).

In sum, a regional innovation network is oriented to regional competitiveness and is composed of heterogeneous groups of actors. Therefore, the values and goals of acting of the related actors in a regional innovative network may be considerably different. This suggests the necessity for creating a suitable socio-institutional environment for facilitating the achievement of shared values and common goals.

2.3 Network Brokerages

The success of regional economies seems to be considerably based on regional capability in trust-based relationships, multi-actor innovation networks and collective learning competence. Activation of these qualities is the key issues of brokerage activities through facilitation, mediation and coordination. Brokerage activities, according to Dubini and Aldrich (1991, 310), are to link units having complementary interests, transferring information or resources, and otherwise facilitating the interests of those not directly connected to one another (requoted in Feldman and Zoller 2012, 25). Brokers can function as intermediaries between the firms and other organizations in a regional innovation networks. The concept of brokerage can also serve to include the notion of the gatekeeper, which represents actors who influence the network through largely informal ties and the selective interventions (Feldman and Zoller 2012, 25-26).

As similar approaches, Bellini (2000) argues that most economies miss an animateur or social entrepreneur. Morgan (1997) depicts the Welsh Development Agency (*WDA*) as a regional animateur, facilitating inward investment and technology transfer, upgrading local firms. Morgan (1997) stresses that a regional animateur such as the *WDA* is needed most in less favored regions (requoted in Malecki 2002, 932). Hirst (1994) suggests local voluntary associations which act as mediators for locally based inter-firm coordination and collaboration. His local associations can have two outcomes. First, by banding together, individuals work together and can foster shared agendas and common interests and organize their activities to cooperate where possible. Secondly, in the process of banding together, individuals develop themselves and construct a variety of social networks through which greater cooperation can be encouraged. Local associations provide one mechanism for institutional cooperation and for the creation of mutual networks (Raco 1999, 954).

Cooke and Morgan (1998) also stress the importance of a relational/complementary development paradigm in successful regional economies. They use the term 'associationalism' to describe a characteristic of a 'third way' between state-led and market-led development. Associational economies demand a more social and collaborative mode of operation. So they are not created easily. In order to be influential, public sector must work together with both the local private sectors and trade associations and other collective bodies (Porter 2000). Vice

versa, since competitiveness in the era of globalization and localization seems to demand attractive macroeconomic policies, intergovernmental cooperation, public-private partnerships and quality education and information.

As a process, economic action is embedded in structures of ongoing social relation (Granovetter 1985; Giddens 1990; Grabher 1993). Thus, the decision-making of a firm is not made in a social vacuum. It is closely interconnected with its related companies, specialized suppliers, service providers, firms in related industries, customers and associated institutions. According to a social network model, trust and collaboration between firms and related institutions are the core elements for competitive places (Piore and Sabel 1984; Granovetter 1985; Kallio et al. 2010). Based on the trust and close collaboration, market failure can be overcome, risk can be spread and innovation and collective learning are facilitated (Cooke and Morgan 1998; Kallio et al. 2010).

Nevertheless, in realities, the searching of potential partners itself is not simple in knowledge networks because they often have very limited information to one another. They often lack a broad common background. They need to develop a certain level of trust to create a knowledge network. Trust as a form of social capital (Putnam 1993, 2000; Lowndes and Pratchett 2008) is not just a precondition for partnership but is also a result of partnership. In addition, they often expect to get the tacit knowledge of potential partners by partnership. However, much of such knowledge can only be successfully transmitted as metaphors (Nisbet 1969), whose meanings are highly culture and context-dependent. Polanyi (1966, 4) notes that tacit and metaphorical knowledge is deeply embedded in specific contexts. Thus, potential partners need to 'know' each other in advance, or need a brokerage to 'link' each other for knowledge networks (Storper and Venables 2004, 357).

In order to understand the nature and possible role of network brokerage in the regional economy, its properties as a type of behavior and interaction need to be identified. In addition, as a third way, a network brokerage model needs to be compared to other typical development models. Table 1 lists three main functions of network brokerage: it can help solve linkage problems and thereby facilitates interaction and learning; it can allow actors to align needs and commitments and thereby mediates selective cooperation; and it can help solve heterogeneity problems and thereby coordinates fragmented regional actors.

Insert Table 1 about here.

The role of network brokerages reflects the ability to enlist actors and, with their help, to generate new ideas and to create the conditions for sustainable development. The scope of

network brokerages covers several aspects: organizational linkages, strategic partnerships, information sharing and a set of spatial economic conditions that induce parties to collaborate. By extensive formal or informal contacts, network brokers serve as a bridge between different firms, as well as between firms and universities and governmental research institutes. They proactively acquire external information and pass it on to suitable entities. Their roles may be to a considerable degree informal. They may operate as a quasi-public institution or a private organization, serving as 'facilitator' or 'mediator' or 'coordinator' for a created network.

3. Research Design and Methods

Regional economies seem to be considerably based on multi-actor innovation networks. Brokerage activities materialize these properties through the roles of facilitation, mediation, or coordination. It is likely that there is a positive externality in these effects, generating increasing returns for the people and the activities involved. Individuals or collectives in an environment of network brokerage interact and cooperate with other high-ability/complementary people or institutions, are well placed to communicate complex ideas with them, and are highly motivated. To be able to reap these benefits in full, an institutionalization of network brokerage is required rather than occasional chances of interaction.

3.1 Network Brokerage Models

There is fragmentary but fairly convincing evidence that network brokerages could be the key of innovation in the production of ideas and knowledge (Granovetter 1985; Putnam 1993; Hirst 1994; Cooke and Morgan 1998; Kallio et al. 2010). It can be adduced that social proximity must somehow improve flows of information upon which innovators depend, creating technological 'spillovers' as part of a *quid pro quo*. In addition, spatial proximity must reduce incentive and coordination problems that arise in economic relationships. With tacit knowledge there is always residual uncertainty and hence the need to minimize the incentives for one agent to free ride or manipulate the other. These moral hazards are obstacles to knowledge 'spillovers' (Storper and Venables 2004, 352-355; Ostrom and Ahn 2007, 5-7). However, the mechanisms underlying these spillovers remain unclear. One avenue of inquiry could be with the brokerage activities among multi-actors, enhancing the ability of the firms in knowledge creation and technology development.

When trying to specify and apply the models of network brokerage, one has to face certain problems. The following questions, at least, are relevant in the context of this work:

- What is the structure of the linkages between brokers and the related entities such as firms, professionalized services, governments, or HEIs (Higher Education Institutions)?
- Are brokerage activities the role of individuals or collectives?
- Where is the location of brokerage activities in the stages of the value chain of production?
- What is the role of brokerage activities in the creation processes of new knowledge and technology?

Insert Figure 1 about here.

The creation of knowledge and technology is often viewed as a continuous interactive social process. It is characterized by a particular division of labor and social cohesion between different firms of the value chain, as well as between firms and universities and governments. Therefore, it is appropriate to view that brokers are interlinked with the main actors of local innovation such as firms, professionalized services, governments and HEIs (Figure 1).

Insert Figure 2 about here.

Brokerage activities can be classified into many types. Based on participants, there are brokerage activities between individuals, between individual and collectives and between collectives. According to the subject of brokerage activities, we may think of brokerage activities in the stages of development and specification of ideas at one side and of circulation and sales of new products at the other side. A generalized type of brokerage activities, therefore, can be expressed like Figure 2.

Brokerage activities in multi-actor networks seem to hold a great deal of weight in the stage of development and specification of R&D ideas. Compared with Quarter II and Quarter IV, Quarter I and Quarter III are expected to be higher in the relative importance of brokerage activities in multi-actor networks. Suppose that a fashion designer needs a special design. If a broker searches/finds a suitable painter and a reliable computer programmer and connects them to the fashion designer, it is classified into Quarter III. Whereas, let's suppose that a firm needs cooperation with HEIs and local governments in the process of specialized technology development. If a broker meets the roles, it is classified into Quarter I (Park 2006, 177).

Insert Figure 3 about here.

The described network brokerage processes have four important stages (Figure 3). The first one relates to an initial search of a network broker to find potential partners (arrow A in

Figure 3). The second stage is linked to an active search and discovery of network opportunities (arrow B in Figure 3). It can originate from a broker or potential partners as well as from their combined efforts. Once a network opportunity is discovered by active search and finding, a network decision is made with respect to its potentials ('feasibility test') The third stage is an implementation process for actual networking (arrow C in Figure 3). Finally, there are positive impacts of output creation and dispersion (arrow D in Figure 3). In reality, it is hard to separate these different stages from one another, but it serves as an analytical tool. This process is characterized by continuous feedback from various stages in the initial search, active search and finding, implementation, and output creation and dispersion.

3.2 The Experiences of Daegu Technopark

Regional innovation networks are formed from an interactive multi-actor environment including representatives of firms, universities, research centers and development organizations. The experiences of interaction between *Daegu Technopark* and the related actors thus seem to be good cases for our research purpose.

Background and Roles of Daegu Technopark

Daegu Technopark is an independent semi-public agency, mostly financed by MOTIE (the Ministry of Trade, Industry and Energy, Korea), the Daegu Metropolitan City, and KNU (Kyungpook National University). The primary aim of the agency is to facilitate knowledge creation and technology development for the entire industry within the Daegu region, especially in the fields of strategic industries. Daegu is a major urban area of about 2.5 million residents which is positioned in south-eastern part of the Republic of Korea. If we consider the residents of hinter area, Gyeongbuk province, the total population of the Daegu-Gyeongbuk region reaches to about 5.2 million residents (see Figure 4).

Insert Figure 4 about here.

Daegu Technopark experts work closely with regional actors of innovation to arrive at carefully thought-out, technically feasible concepts with a clear, consistent focus. *Daegu Technopark* also assists to pinpoint the potentials of public projects, to evaluate whether project ideas and implementation plans are actually realistic and can be implemented in practice. In general, *Daegu Technopark* supports new and growing firms, innovation projects of firms and the setting-up of incubators and technology centers. Thus it has strongly oriented into the development of regional economy through the building of regional innovation system (*Daegu Technopark* 2014, 2).

The main functions of *Daegu Technopark* are as follows: the generation of new urban type and growth-oriented power engine; the performance improvements of cultivating policies for regional industry; the partner roles for firms' R&DB and the commercialization of technology; the strengthening of network hub for firm supports; and the planning, evaluation, and activation of regional strategic industries (*Daegu Technopark* 2014, 2). The establishment of *Daegu Technopark* is one example of public-sector proactivism designed to correct market failures. *Daegu Technopark* provides a bridge between a range of actors in order to encourage knowledge transfer and technology development, and to assist local government as well as central government in the decision-making processes of financial support.

The Surveys

The empirical base for the following analysis was established in a series of 22 interviews and in a review of the network-related minutes. An interview survey was implemented for the related actors for the period of March 2015 – April 2015. In the interviewing processes, network relations among firms, universities, and public institutions were considered. So this research selected 6 people from firms, 9 from universities and research institutions, 3 from Daegu Metropolitan City, and 4 from *Daegu Technopark*. The sample included the related and representative firms, universities and research institutions, local government, and *Daegu Technopark*. Although interviews covered the general evaluation of *Daegu Technopark*, the role expectation of *Daegu Technopark*, and the perception of the conditions, unrestricted responses were also encouraged. The review of minutes was based on 8 serial meetings for RIRM (Regional Industries Roadmap) in 2006 and 11 serial meetings for a Focus Group activity (the support of MICE industry) in 2009. The participants are mainly from universities and public research institutes, Daegu Metropolitan City, professionalized service sectors and *Daegu Technopark*. The number of participants was about 10 and more per meeting.

4. Research Results

The creation of new technologies and knowledge is viewed as an interactive social process within a firm and between different firms of the value chain, as well as between firms and universities and governments. This process seems to be characterized by continuous feedback from various stages in search, feasibility test and network decision, actual networking, and interactive learning between the actors involved. Innovative activities are risky in that there is uncertainty. It is a quite common theme in the literature that, somehow, the regional innovation networks have an influence on the coordination of firms' actions, for example, by reducing uncertainty (Camagni 1991). The growing importance of regional networks thus seems to be clear, but the exact mechanism by which such coordination is accomplished is far from clear.

Regional innovation networks are formed from a heterogeneous group of various actors. It does not seem to be a spontaneous process for the various actors to make harmonious relations and to promote the sharing of knowledge and the adoption of common strategies. The various actors often lack a broad common background and need to develop a certain level of trust to create a knowledge network. So what they need is to find out network brokers to link them for knowledge networks. A distinction has been made between the roles of network brokers such as facilitator, mediator, or coordinator.

4.1 Multiple Interaction Facilitator

Interactions of various actors enable firms to modify and refine heuristics and routines along existing trajectories or to develop new technologies towards new development paths. Interaction and learning are at the core of the reflective economy (Lundvall and Johnson 1994). When the innovative capability of the network is seen as a capability to organize and use the resources of the network to facilitate the innovation-creating activities, *Daegu Technopark* can be understood as a catalyst to strengthen this capability. In a network, brokerage activities accelerate various interactions for the innovation-creating activities of the whole network. The social character of *Daegu Technopark* gains in importance as knowledge and technologies become more complex and sophisticated and as specialization and segmentation increase (Bathelt and Glückler 2003, 136).

The brokerage activities of *Daegu Technopark* are an individual or a collective effort. *Daegu Technopark* has uniquely developed 'Cell Groups for knowledge research' and has employed them as a channel for natural meetings of related actors in the development processes of new products and technologies (Park 2006, 180). They are typical brokerage activities for catalytic action. In the analysis of the 8 minutes for Daegu RIRM and the 11 minutes for MICE Focus, it is clear that *Daegu Technopark* arranges the needs of the meetings such as meeting rooms, related documents, agendas, proceedings, and even most participants. By conveying the demands of *MOTIE* and *KIAT* (Korean Institute for Advancement of Technology) to the regional actors, *Daegu Technopark* facilitates the networks. In addition, *Daegu Technopark* reflects the needs of regional actors to *MOTIE* and *KIAT* and also facilitates the bottom-up decision-making.

The following three interviews seem to be suggestive for the facilitative role of *Daegu Technopark*.

In the processes of problem solving, *Daegu Technopark* seems to have a fine posture and willingness to take into consideration the conditions of local SMEs. *Daegu Technopark* is

conducive to picking up useful information for R&D and marketing (Director W, ID information system).

Policy supply is in discord with policy demand. Although public institutes including *Daegu Technopark* lay emphasis on the generation of new programs for technological development and network collaboration, the suitable operation and improvements of the existing programs are mostly required in reality. I feel not quite satisfied with the operation details of *Daegu Technopark*

(Dr. S, Super Textile Business Team, Korea Textile Development Institute).

When we try to develop cutting-edge products like super textile or carbon textile, we feel keenly the necessity of networking with university researchers. In that case, *Daegu Technopark* may contribute to our networks with university researchers (Director L, Tex Quest).

The following interview illustrates a basic aspect of the intermediary role of *Daegu Technopark* between firms and research institutions.

We acknowledge the necessity of cooperative networks among universities, governments, local firms, and even other industries. But, in reality, it is not easy for us to grasp the contact opportunities with the potential network partners. To make face-to-face contacts, we need, first of all, an official justification for making contacts. Such considerations for the justification may be easily provided by *Daegu Technopark* (General Manager L, Korea Textile Center).

Interviews with the directors of private firms, a professional researcher of a research institute, and a manager of a public institution have revealed that accessibility to local firms, detailed considerations suitable to local conditions, differentiation to linkage purposes, and cooperative networks and the provision of contact opportunities are perceived as important elements for created networks. It seems to suggest what a catalyst should do in the processes of brokerage activities. *CONNECT*, mini clusters and various forum activities which are recently popular in industrial complexes seem to be the results of perception of the importance of the linking structure and opportunities between the related actors in regional innovation networks.

4.2 Complex Interests Mediator

Many projects for regional innovation are often in progress without the close connection between the actors of regional innovation. Central government projects for regional innovation don't seem to be properly connected with the actors of regional innovation. In these cases, we can focus upon the mediators who can allow the actors of regional innovation to align their needs and commitments and thereby serve for the division of roles and selective cooperation.

According to Jaffe's analysis for the US 29 states, university research and private R&D are closely correlated in the spatial dimension (Jaffe 1989). According to a German data, the more a region is endowed with university research or other public-sector research institutes, the more clustered are private R&D activities in this region, and the more likely is the establishment of new R&D-intensive firms (Doring and Schnellenbach 2006, 387). Although these studies do not include the detailed linkage loops, it is evident to indicate that private R&D activities should be reviewed with the R&D activities of universities and public research institutions in the processes of regional innovation. The conflicts between local governments and the central government are quite normal in the distribution of national resources (e.g. finance, human resources), particularly in the centralized political systems like Korea. In this case, mediation between the local government and the central government is needed. As a provider of financial resources, the central government often stresses national objectives such as balanced national development, high-tech areas development, and so on. On the other hand, a local government has its own goals and conditions. Because many local governments often want to be the regions of high-tech centers, the central government is faced with a serious problem in allotting national resources.

In the processes of allotting national resources, most policy-makers of the central government are clearly under political pressure for fear of offending some regional interests. The Sainsbury (1999) report on biotechnology clusters in the UK, for example, finds promising biotechnology clusters in almost all regions of the country, even though in many regions the 'clusters' are small and lack the basic requirements. There is an obvious political tension in allotting national resources (Martin and Sunley 2003, 25). Network brokers can attempt to mediate the conflicts between the direction of central government policies and regional conditions. If necessary, they try to change the criteria of performance evaluation and to expand the scope of their roles. In particular, *Daegu Technopark* can act as a mediator for consensus building between the actors of regional innovation in the allocation processes of national resources.

The followings represent the awkward and difficult positions of *Daegu Technopark* in mediating processes made by a senior manager, a senior director, and a government official.

Daegu Technopark is doing quite well in assisting local firms, I believe. What I think as a problem of *Daegu Technopark* is that the programs of *Daegu Technopark* are too much regulated by the direction of central government policies. By doing so, *Daegu Technopark* may not well conform with the specific demands of local SMEs (Senior Manager C, ESIS - eBiz Creator).

The supporting programs of *Daegu Technopark*, I think, are mainly determined by quantitative evaluation criteria. So, the supporting programs show a marked trend toward some selected entities. What I worry is that the supporting programs may not well coincide with the creative activities of textile and fashion industry (Director L, Tex Quest).

The network brokerage by *Daegu Technopark* is not limited with linkage activities among local SMEs. It should comprise the apprehension of regional conditions of local firms, long-term regional planning, and budget acquisition from central government (Government Official P, Daegu Metropolitan City).

According to the analyses of the 8 minutes for Daegu RIRM, some regional actors are very positive in expressing their opinions and are quite sensitive to some issues such as the selection criteria and direction of strategic industries and specialized sectors. Local firms and specialized research institutes which are related to strategic industries and specialized sectors are in general very positive and sensitive to the selection criteria and direction. So there seems to be in all the likelihood of conflict between them. Public officials at Daegu Metropolitan City also show similar behaviors in protecting their own turfs. Nevertheless, they worry about conflicts with *MOTIE* and wonder if the interim report of Daegu RIRM is flexible enough to deal with the demands of *MOTIE*. In addition, there are other conflicts between Daegu Metropolitan City and other local governments. In these cases, *Daegu Technopark* needs to adopt a broad scope of brokerage activities as a mediator. These mediating activities are often required in interactive multi-actor relations (Figure 1) and seem to be important in the processes of specification and the implementation of ideas. Thus, these activities are close to Quarters I and III in Figure 2 and to arrow C in Figure 3. In arranging the 8 meetings, *Daegu Technopark* invited professors and professionalized researchers who showed neutral positions as outside specialists. They worked as a shield to avoid unnecessary conflicts in the mediating processes of *Daegu Technopark*. However, there is no marked symptom of interactive conflicts in the 11 meetings for MICE Focus. The reason seems to be mainly due to the thematic characteristics of the meetings.

4.3 Localized Coordinator

It must be a difficult process to coordinate delicate and complex linkages between the actors of regional innovation. It is because of the additional need for the proper analysis and judgment of network conditions and the consideration of future development. However, a complex linkage in Figure 1 and multiple stages of brokerage activities in Figure 3 strongly suggest that brokerage activities should not be limited with the roles of facilitation and mediation.

External environment has been rapidly changing in the processes of regional innovation. Research projects have been basically supported by the form of individual application and decision until recently. Thus, external participation has been to a certain degree limited in the formation of research ideas and in the dispersion processes of research results. However, there is now a new tendency to cover the positive concerns and supports of various actors of regional innovation and to demand the active participation of related firms. In this process, there is a need for coordination between the actors of regional innovation.

About this new tendency, Professor K who is working as the head of *KNU Technopark* points out the rapid changes and active countermeasures of the external research environment like the following.

What I believe is *Daegu Technopark* should lead Daegu regional economy. In order to do that, *Daegu Technopark* leaders should seize the essence of global technology trend. We need a preemptive response to the changes of technology environment. So, I emphasize the importance of manpower management and fund raising of *Daegu Technopark* (Head K, *KNU Technopark*).

This reveals the importance of a comprehensive and active linkage function of *Daegu Technopark*. In Figure 3, the network broker actively searches the network opportunity and the network decision is accomplished by a comprehensive consideration. It is said that the network of industries-universities-research institutions-governments is important in the formation and specification processes of creative ideas. However, the comments of Head K of *KNU Technopark* clearly show how to actively deal with the changes of technology environment. There are the concerns of external environment, an active minded leader, and the existence of a local coordinator for a substantial success.

The followings are three interviews which reveal the complicating aspects of the coordinating role of *Daegu Technopark*.

Some local firms may live on the edge of subsistence by the supports of public programs. What is worse, they may commit illegality and corruption through unfair bargains. They are wasting a national tax (President K, Korea Research Institute for Fashion Industry).

As the main functions of *Daegu Technopark*, I want to emphasize the importance of success ratio uplift rather than simple network activities. *Daegu Technopark* should pay attention to picking out the potentiality of local firms. By doing that, the supporting activities of *Daegu Technopark* can be substantially successful (Head K, *KNU Technopark*).

There is no doubt *Daegu Technopark* can work as a regional supporting institutes for local firms. *Daegu Technopark* has a reputation, know-how, and manpower for comprehensive supporting services from start-ups to circulation and marketing. However, there are also other supporting agencies and R&D institutes for local firms in Daegu Region. *Daegu Technopark* does not have enough official coordinating power in proportion to a network-supporting center (Dr K, *Daegu Technopark*).

The above interviews indicate the moral hazard of program recipients, the managerial capabilities of *Daegu Technopark* in the operation of supporting programs, and the positional limitations of *Daegu Technopark* in the grasping processes of regional potentials. These are to indicate the comprehensive and complicating aspects of the coordinating roles of the network brokers. In the analyses of the 8 minutes for Daegu RIRM and the 11 minutes for MICE Focus, *Daegu Technopark* arranges the overall meetings. In the arranging processes, *Daegu Technopark* takes into considerations about various perspectives, conditions, and the nature of the participants. In addition, *Daegu Technopark* is expected to act as a substantial communication node to correspond with the coordinating roles of the network broker.

The support programs for technology innovation in the nation or the region seem to perform the coordinating functions of network brokerage to a certain degree. Among them, project managers and the technology transfer center of *Steinbeis* Foundation for Technology Promotion in Germany seem to perform the coordinating function of network brokerages in networking processes. They are not depending on a push method to transfer the knowledge and technologies of Foundation to local firms, but on a pull method to outsource the required technologies from specialists by networking (Chung 2005, 31-35).

4.4 The Potentials of Network Brokerage Activities

From the empirical surveys, it is evident that brokerage activities are necessary for activating the networks between regional actors. The types and roles of network brokerage can be largely summarized as 3-Ion's (facilitation, mediation, or coordination). Nevertheless, there

are still questions of how much they are effective in actuality and of how often they are happening in actual cases. *Daegu Technopark* experiences seem to show that the facilitative activities of *Daegu Technopark* are practically working for activating regional networks between local government, universities and research institutes, local firms, and professionalized services. However, there are some hesitations for mediative or coordinative functions by *Daegu Technopark*. In particular, we can identify some limitations of coordinative activities by *Daegu Technopark*.

The following interviews emphasize the basic and core elements for the effective working of network brokerages by *Daegu Technopark*. They are focused on the limitations of its budgetary deficit and the problem of its organizational management.

Budget is an essential ingredient for an intermediary organization to fulfill its function, particularly in U-G-I alliances. If an intermediary organization does not secure enough budget, it degrades to the status of an organization for a simple meeting (Dr H, *Daegu Technopark*).

The brokerage activities of *Daegu Technopark* are mainly determined by the amount of money. Without money, I believe that there is hardly to see a concentration. By a curtailment in the budget of *Daegu Technopark*, *Daegu Technopark* is now just working as one of supporting institutes for local firms in the Daegu region (Professor S, KNU).

I want to pinpoint that there is a weakness in evaluation system of *Daegu Technopark*. It is required to hand in visible results within relatively short-period of time. So, we can expect the possibility of a distorted process between research supports and research results. We may need a generous attitude for the failures of collaborative researches (Dr K, Daegu Metropolitan City).

Evidently, we can infer that it is a *sine qua non* for *Daegu Technopark* to have coordinating resources such as adequate budget, competent manpower, and good performance management system to be a main node of networked cooperation.

5. Conclusions

This paper aims to examine the nature and function of brokerage activities in regional innovation networks and their utility as a way of local networked cooperation. The creation of knowledge and technology is often viewed as a continuous interactive social process. It is characterized by a particular division of labor and social cohesion between different firms of the value chain, as well as between firms and universities and governments. Therefore,

brokerage activities may have three main productive effects in networks: they can facilitate creative interaction and collective learning processes, especially by encouraging opportunities for a multi-actor communication; they can mediate complex interests between the regional actors by generating effective ways of interchanging information and between the local government and the central government by providing the criteria of performance evaluation which can satisfy both of them tolerably well; and they can also coordinate the complicating demand and requirement of fragmented regional actors. They particularly affect the linkage structures and characteristics of regional networks. This research discusses each of these features in turn, and develops structural, divisional, or procedural models of them.

The analysis of *Daegu Technopark* case indicates that the positive results of network brokerages are mainly due to the proximity and willingness of a network broker to local firms, the making and operation of public programs suitable to local conditions, differentiation to linkage purposes, the provision of contact opportunities, flexible maneuvering and consensus building efforts, and an active-minded leadership applicable to the circumstances. It is, of course, apprehended that *Daegu Technopark* shows some signs of potential limitations in the grasping and activating processes of regional potentials, such as a discontented aspect of managerial capability, a budgetary deficit, and a distorted process of performance evaluation system.

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Table 1. Network Brokerage Model and Typical Development Models

	Development Paradigm	Governance Structure And Way	Functions	Cases
Traditional Development Model	Uneven/selective, State-led and top-down development	Tight, Based on directive institutional arrangements	Formal Arrangements	Growth poles (Perroux, 1950)
Network Brokerage Model	Relational/ complementary, In-between way and middle-up-down development	Moderate, Based on networked local institutional milieu	Facilitation, Mediation, Coordination	Daegu Technopark WDA(Morgan, 1997) Steinbeis Foundation (Herrigel, 1993)
Silicon Valley Model	'Grassroots'/ autonomous, Market-led and bottom-up development	Loose, Based on inter-firm collaborative arrangements	Informal Coordination	Silicon Valley (Cooke, 1998)

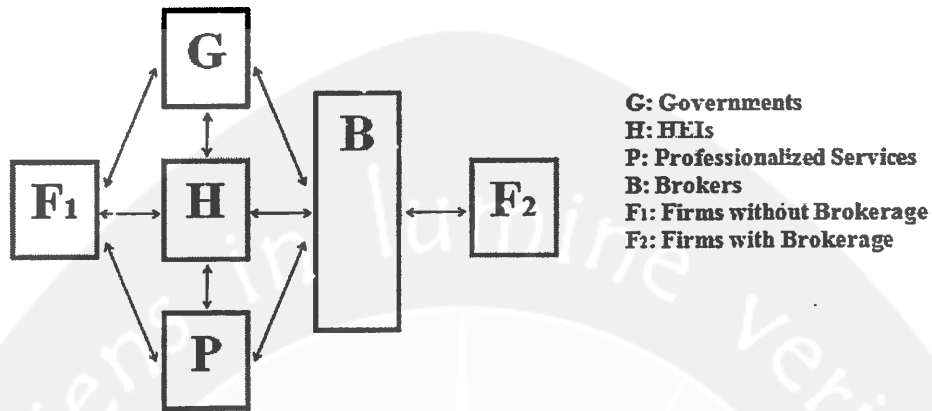


Figure 1. Brokers' Linkages with Related Actors

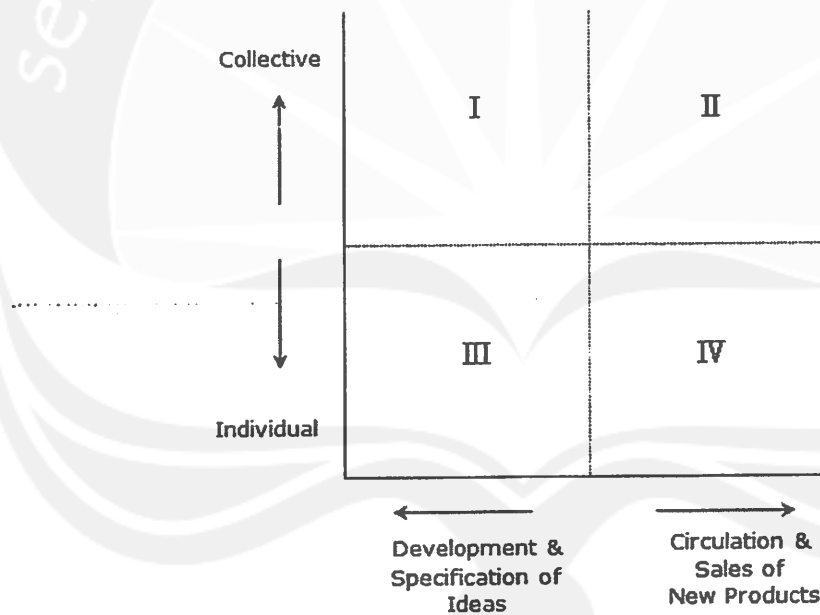


Figure 2. Classification of Brokerage Activities Source: Park(2006, 177).

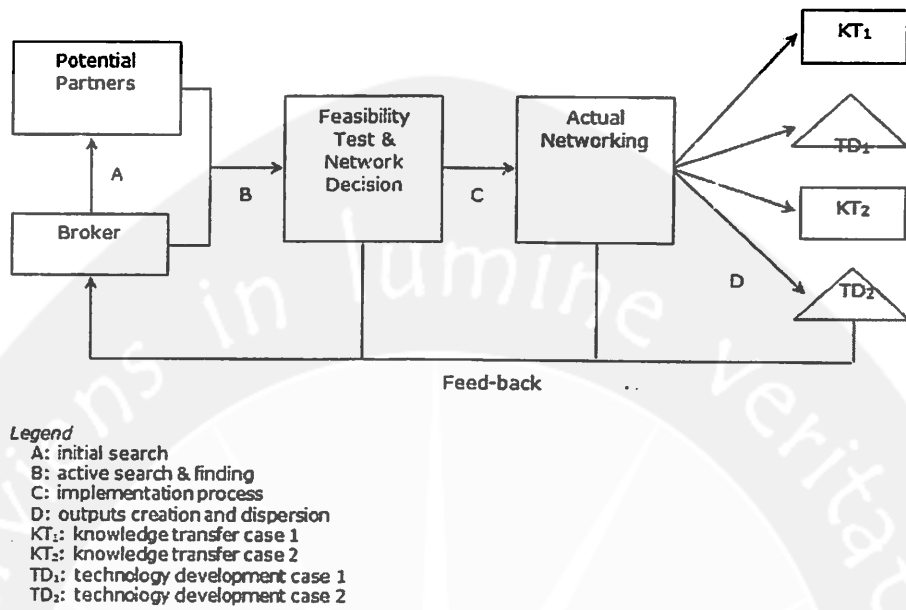


Figure 3. A Stage Model of Network Brokerage

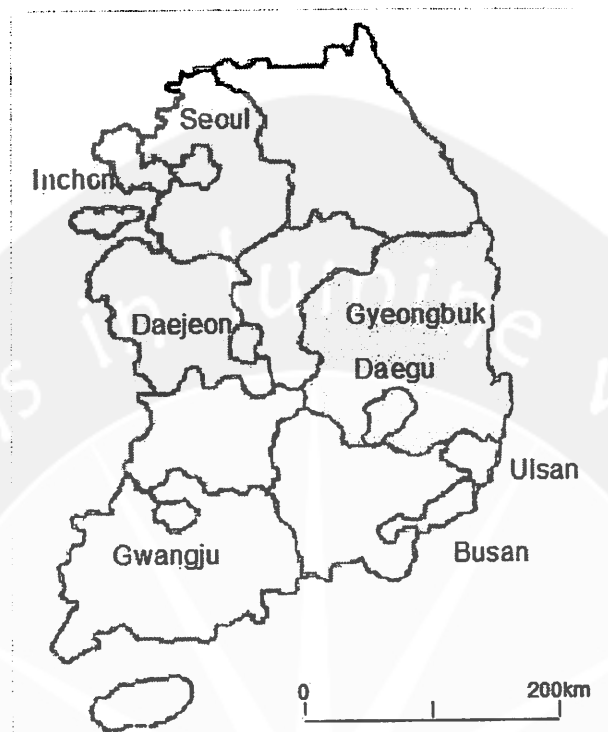


Figure 4. Geographic location of Daegu-Gyeongbuk region in Korea

Notes

ⁱ In the stages of circulation and sales of products, the networking between firms may be still important, but the relative importance of networking between firms and universities and between firms and public institutions seems to drastically decline. Nevertheless, the high-order producer services such as accounting, legal consulting, and marketing seem to be mainly applicable to Quarter II and IV in the operation processes of firms.

ⁱⁱ In the formation of networking, Lorenzen and Foss (2003) focus on the aspects of cognitive coordination. Cohen and Levinthal (1990) and Kallio et al.(2010) stress the importance of the absorptive capacity of firms. The absorptive capacity of firms refers to the capacities to use diverse knowledge from external sources by assimilation processes or application processes for commercial purpose.

ⁱⁱⁱ MICE industry, mostly called with Exhibition industry, is a complex industry including four basic elements: M - Meetings, I - Incentive travels or Incentive tourisms, C -

Conferences, E - Exhibitions or Expositions (MICE industry 2015).

^{iv} The Cell Group is on a small scale and specialized research community in the Daegu region. The main purpose of Cell Groups is to solve the bottleneck technology, to develop new products and to achieve process innovations. In *Daegu Technopark*, Cell Groups have been formed and practiced by regional strategic industry since October 2004. The participants did not properly recognize the activities of Cell Groups at the beginning. So, they considered the opportunities of Cell Group meetings as a kind of 'social activities'. There was a start of dispersion of common recognition for the necessities and expectation of Cell Groups by the necessities of regional innovation and the sharing of regional conditions. There were 80 working Cell Groups in 2005, and then 217 working Cell Groups in 2008. However, the official supports to Cell Groups were terminated by the managerial burdens, limited budget, and the requirement of quantitative performances by governments a few years ago (*Daegu Regional Innovation Agency 2009*).

^v *CONNECT* is a regional program that catalyzes the creation of innovative technology and life sciences products in San Diego County by linking inventors and entrepreneurs with the resources they need for success. Since its inception, *CONNECT* has assisted more than 3,000 technology companies. Its programs serve as a catalyst for the development and exchange of new ideas. The leadership of *CONNECT* attributes its success to the unique culture of collaboration between industry, capital sources, professional service providers and research organization that *CONNECT* has sought to foster in the region (*CONNECT 2015*).

^{vi} The *Steinbeis* Network comprises more than 1,000 specialized *Steinbeis* companies from a variety of fields. Most centers are managed by professors at universities. With more than 6,000 experts, the *Steinbeis* Network has at its disposal tremendous resources of know-how and practical experience from all areas of technology, industry, and markets. This enables *Steinbeis* to answer customer demands with holistic, end-to-end solutions (*Steinbeis 2015*).

Education 5

Venezia

2015/07/22 Wednesday 15:15-16:45

Session Chair: ***Prof. Kiho Song***

ISBSS-4538

The Effective of Using 5 Simple Steps (Qscs) Learning Activities on Facebook to Promote Self-Learning in the 21st Century, Technology Printing and Advertising Course for Undergraduate Bachelor's Degree in Education Technology and Communications.

Tipparat Sittiwong | *Naresuan University*

Thanet Wongnam | *Naresuan University*

ISBSS-4570

Continuous Professional Development and Lifelong Learning: Needs Assessment and Way Forward for Hong Kong

Peter Yuen | *The Hong Kong Polytechnic University*

Jason Chan | *The Hong Kong Polytechnic University*

Florence Ho | *The Hong Kong Polytechnic University*

Vincent Law | *The Hong Kong Polytechnic University*

ISBSS-4572

The Industrial School of the Nineteenth-Century America

Kiho Song | *Hannam University*

Heesu Kim | *Hannam University*

ISBSS-4586

An Application of the Attribute Hierarchy Method to the Cognitive Diagnosis of Algebraic Reasoning Abilities

Yuan-Sung Wang | *National University of Tainan*

ISBSS-4609

Meaning of Creativity: A Study of Teachers and Students' Conception of Creativity in Higher Education

Henry Ma | *The Hong Kong Polytechnic University*

ISBSS-4538

The Effective of Using 5 Simple Steps (Qscs) Learning Activities on Facebook to Promote Self-Learning in the 21st Century, Technology Printing and Advertising Course for Undergraduate Bachelor's Degree in Education Technology and Communications.

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Abstract

This objectives of this study were: 1. To study on the result of implementing QSCCS with Facebook; 2. To study on students' opinions concerning implementing QSCSS with Facebook. The sample were 38 Technology and Communications undergraduates who attended Printing and Advertising Technology course in academic year of 2013. The information was gathered by using the achievement test regarding implementing QSCCS with Facebook and a questionnaire regarding students' opinions concerning implementing QSCCS. Later on, the information was analysed to find percentage, mean, standard deviation, independent t-test, and problems conclusion and suggestions.

The result showed that: 1. Students achieved higher score after implementing QSCCS. The significance was .05; 2. Students' opinions concerning implementing QSCCS with Facebook was high ($\bar{x} = 3.69$, $s = .47$). Once considered in all aspects, the aspect that achieved the highest mean was the one that allowed students to study on their own ($\bar{x} = 3.92$, $s = .75$). Following by implementing Facebook with learning in order to allow students and teachers to be able to communicate in more various ways ($\bar{x} = 3.82$, $s = .61$). Finally, there were three aspects that achieved the same mean, which were: students were involved more in learning activities ($\bar{x} = 3.76$, $s = .71$), Students were able to study by themselves more ($\bar{x} = 3.76$, $s = .71$), And Facebook helped students to enjoy the learning more happily ($\bar{x} = 3.76$, $s = .71$).

Keyword: QSCCS, Learning Process, 5-step learning process, Facebook, Social media

1. Introduction

Global 21st century. Teachers need to transform themselves from "teaching" as a coach. The training project for learning, integrated intelligence flourish from within, not from teachers, students put their knowledge into cubes, put the brain. (New Review . 2556) From the above it is seen that. In the world of learning in the last century. 21 Students will have the essential skills. In the world of today, including skills, critical thinking, problem solving, creativity. Communication and Collaboration The skills that will be more then. Learning styles have changed dramatically from the format classes, the students will be the only recipient. Change is coming, the students must be proactive, that is, the students will have to seek self-knowledge from the media. In particular, the research data over the Internet. But the self-study, the students must be able to analyze. Synthetic data correctly Used for the benefit of themselves and society. So, in teaching the teachers and the students will have to change, both parties will be able to survive in the world today has a quality that is truly consistent with the state of the century. 21 It is learned that emphasizes the importance of giving the students pursuing self-knowledge. From such significant results in teaching in elementary school. Secondary and Higher Education has changed the way of teaching to comply with such changes. Particularly in higher education, focused on the students to learn on their own. Seeking self-knowledge Responsibility for their own learning as well. The study found that the process of teaching activities using the paradigm stairs. 5 How can promote self-learning, and to promote the learning of the century. 21 In terms of skills, too.

QSCCS or as we called paradigm stairs five. The means of teaching to assist learners and potential of individuals is a universal quality. In researching skills Knowledge and knowledge needed basis. Can think critically, communicate effectively creating synthetic life skills co-operation with others as well. (Office of the High School. Office of the Basic Education Ministry of Education, 2555) Paradigm Learning 5 Comprising the steps of QSCCS 1. Learning by asking questions (Learning to Question) 2. Learning seek information (Learning to Search) 3. Learning to build knowledge. (Learning to Construct) 4. Learning to communicate (Learning to Communicate) 5. Learning to society (Learning to Serve) This learning process, thus fulfilling the century. 21 By encouraging the students with skills in observation, then hypothesis. Can research pursuits Analysis Artificial intelligence Able to communicate and present effectively. And knowledge applicable to service or repay society. Such skills, which is the feature of a good citizen of the century. 21 Based approach to teaching and learning in schools, international standard of education besides teaching paradigm in which we can learn. 5 QSCCS procedures applied to teaching already. The tools of communication are important in helping to foster self-learning increased. Social tools (Social Media) A tool that has gained popularity in all age groups and is a tool that can be

applied to teaching and learning, to promote self-learning and promoting century skills. 2 1
As well In particular, Facebook is the most popular now.

Facebook Or Facebook Is an online social networking service The user can create a profile. Add other users as friends and exchange messages. Communicate Q set point in the scrap. Post photos posted video clips. Write articles or blog Instant chat In addition, users can also join personal interest groups, organized by workplace, school, university or other. The activities Through the application added. (Applications) are widely available Facebook The rescue services to communicate between friends. Which communicate by writing notes. Commenting on the post. (Megan Poore. 2013), but in a year. 2012 Facebook has been a recent increase in popularity was overwhelming. Until more is crowned Social Media is the largest user in the world. The number of users in aggregate over. 1 Statistics show more than a billion people by the number of users Social network. 18 Million People use Facebook 85% The use of Facebook has grown. Last year 24% and the number of public posts per day. Face book - 31,000,000 per day. The interaction (Likes, Comments, Shares) at an average of 624,000 times a day (World Map of Social Networks 2009-2012, 2513), and the study found that Facebook can promote self-learning and promote effective learning for the students to learn. By Objectives (Thiparat rights Wong. 2557 Nathapol lotus Urai, 2554. Nada Dabbagh, Anastasia Kitsantas, 2011).

Of such importance The research suggests that there should be an event for teaching led by Paradigm Learning 5. Steps include QSCCQ 1. Learning by asking questions (Learning to Question) 2. Learning seek information (Learning to Search) 3. Learning to build knowledge. (Learning to Construct) 4. Learning to communicate (Learning to Communicate) 5. Learning to society (Learning to Serve) A ladder to help the students develop the knowledge, integration with Facebook, a tool for self-learning as well. Used to develop teaching skills to promote learning and attitude are desirable for being a citizen of the century. 21 This is in line with current circumstances

2. Purpose of research

2.1 To study the effects of teaching activities with ladders. 5 Step (QSCCS) Integrated with Facebook to promote self-learning of the century. 21 Course printing technology and advertising. For students of Bachelor of Technology and Communications.

2.2 The opinion of the students on the teaching activities with ladders. 5 Step (QSCCS) Integrated with Facebook to promote self-learning of the century. 21 Course printing technology and advertising. For students of Bachelor of Technology and Communications.

3. Scope of Research

Population: 38 undergraduate Technology and Communications students learning technology, printing and advertising. Year 2013

The variables used in the study.

The variable is the use of teaching and learning activities with ladders fifth stage. (QSCCS) with Face book.

The dependent variable is the result of studies and opinions on the activities of teaching a five step ladder. (QSCCS) with Face book.

The content used in experiments: Course Technology 375 366 printing and advertising. Year 2013

4. Tools used in research

The results of the research activities, teaching five stairs. Step (QSCCS) together with Facebook. To promote self-learning in the 21st century. Course Technology Printing and Advertising. - Undergraduate Students Association for Educational Communications and Technology, researchers used the results of the evaluation form. 2 Sections

1. Achievement before and after learning activities taught by five steps. Step (QSCCS)) With Face book to promote self-learning of the century. 21 Course printing technology and advertising.
2. Behavior Evaluation of the learning paradigm Step Ladder 5 (QSCCS).
3. Survey among students with learning activities with ladders. 5 Step (QSCCS) .With Facebook to promote self-learning of the century. 21 Course printing technology and advertising.

5. How to Conduct

5.1 Creation Tool

- Construction of achievement before and after learning activities, teaching a fifth step ladder (QSCCS). With Face book to promote self-learning courses in the 21st century printing technology and advertising.
 - Behavior Evaluation create the learning paradigm stairs. 5 Step (QSCCS)
 - Survey among students with learning activities with ladders Step 5 (QSCCS). With Face book to promote self-learning courses in the 21st century printing technology and advertising.

5.2 Data Collection

Information collected in the course of printing technology and advertising Year 2 /. Number 2013 38 By assessing student achievement under the stairs. 5 Step (QSCCS) in combination with Face book and will assess achievement at the end of the teaching process. 1 Term At the

end of the study period. 1 Course is conducted opinion of students towards the teaching activities with ladders. 5 Step (QSCCS) with Face book.

5.3 Data Analysis

I. An achievement before and after learning activities taught by five steps. Step (QSCCS) With Face book to promote self-learning of the century. 21 Course printing technology and advertising. Compare achievement before and after learning by finding the mean and statistical t-test Dependent.

II. Behavior Evaluation of the learning paradigm stairs. 5 Step (QSCCS) with Face book. The researchers performed analyzes using finished for processing statistical data. The average and standard deviation of individual items and specifically with the offer. Information tables with subtitles The third set threshold values. North of Liquor (Likert. Scale), which establishes a three-level scoring is a little more moderate. Then, Defined criteria for interpretation of the criteria incorporated in the translation is the average of the three levels are frequent and sometimes long times.

III. The questionnaire for students, including students with learning activities with five stairs. Matches, (QSCCS) with Face book to promote self-learning of the century. 21 Course printing technology and advertising. Of the research conducted to analyze the data using a programming model for processing statistical data by using the attention the mean and standard deviation upcountry individual messages and information on. table captions by device prescribed threshold value. 5 North of Liquor (Likert Scale). Then, define the criteria for the interpretation of the five levels that most agree agree agree moderately agree less and less possible.

6. Results

Results of teaching activities with ladders. 5 The QSCCS) Integrated with Facebook to promote self-learning of the century. 21 Course printing technology and advertising. For students of Bachelor of Technology and Communications. Are as follows:

6.1 Results of teaching activities with ladders. 5 Step (QSCCS) Integrated with Facebook to promote self-learning of the century. 21 Course printing technology and advertising. For students of Bachelor of Technology and Communications. Found Posttest scores than pretest may be due to the process of teaching students to be involved in the design, learning plans. By the pursuit of self-knowledge that will bring learning in the classroom. In addition, the content has to be there to share it with the classroom of the course, the student can facebook reviewed the content they want at any time.

6.2 The behavior of the learning paradigm Ladder 5. QSCCS step in the overall level. (= 2.85 , . 09) Including the search of knowledge and information (Learn to Search: S) for the creation of knowledge (Learn to Construct: C) communications and provide effective (Learn to Communicate: C) and social services and so on. Public Mind (Learn to Serve: S) due to the learning paradigm stairs. 5 QSCCS encourage students to effect change. The sharing is a good model. And is a leader in developing collaborative learning. In particular, this method focuses on process rather than product going on. It made clear to the achievement not jump, but behavioral aspects. Clearly changes Consistent with the findings of the General Aviation WATTANA sacred obligation. (2553) Found that the development model followed by support for local teachers to bring the program into the curriculum of classroom teachers. It changes the role of learning with mentors who provide guidance. Advising teachers on student learning.

6.3 The opinions of the students on the teaching activities with ladders. 5 Step (QSCCS) Integrated with Facebook to promote self-learning of the century. 21 Course printing technology and advertising. Overall, the high level considering each aspect with an average maximum of three consecutive include. The opportunity for students to learn on their own or working together , in line with the research of God's Gorinchem Bong Pong debris. (2554) Has done research " Results of the study by e-learning and collaborative learning through social media with the ability to use information and communications technology of undergraduates. Education Education Branch " Find that the opinions of students toward learning with e-learning and collaborative learning through social media. At a good level (= 4.13 And SD = 0.74) Kerr and the University Calendar (Curtin University), Australia was found. Using a discussion board on Facebook as a form of interaction with the students. The learners are more discussions about curriculum and homework. In particular, the students and staff began posting links to additional learning support tool in the group. But not as part of the reading of the official group shows that Facebook can create interaction between the learner and help in the exchange of ideas between the two, the second is to use. Facebook in the activities of teaching allows students to communicate with instructors have more diversity. As research Thiparat the family. (2557) Social media said the technology has been applied to many online tools, knowledge management systems to the network. That can reduce inequality of access to knowledge resulting from the professional experiences of each season. Show that the use of Social media makes communication easier. And third, With an average of three equal sides. Students participate in activities to learn even more opportunities for students to learn on their own and learn to use Facebook allows students to learn with fun and learning at the pleasure of the opinion of the students can be concluded. that the use of Facebook to help achieve self-mastery. The exchange of ideas and interaction. This is a feature of the century learners. 21

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ISBSS-4570

**Continuous Professional Development and Lifelong Learning: Needs
Assessment and Way Forward for Hong Kong**

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Abstract

This Study aims to assess the needs of Hong Kong's industries and businesses for continuous professional development (CPD) and lifelong learning (LLL) as well as the state of development of organisational learning (OL) in selected industries and businesses. The Study consists of two stages. The qualitative stage adopts a data-driven approach through which the analytical framework is derived from the data collected from focus group discussions and in-depth interviews of employees, employers, relevant officials, and course providers. A total of 133 informants participated in the exercise. The text data is organized with the aid of the NVivo software. The subsequent quantitative stage collects data via a questionnaire survey. A total of 544 completed questionnaires was received.

Results show that industries and businesses in Hong Kong show concern for CPD, and recognise its importance. Government, industry/business sector, and training/education providers have put in effort in setting up a series of mechanisms to support CPD and LLL. Courses that are in high demand -- such as language and management-related topics -- have ample supply. Programmes for the service industry are not in short supply. For more specialised or manufacturing-related courses, the supply tends to be scarce. The importance of non-credit bearing short courses is recognised. All are supportive of Government's Recognition of Prior Learning (RPL) scheme, as well the Qualifications Framework (QF) and Credit Accumulation and Transfer (CAT) schemes. Most working individuals are familiar with Continuing Education Fund (CEF) and many have received

support from the Fund. Not many companies provide flexible work arrangements for employees undertaking training. There is room for most companies to increase their training resources. Under-staffing is a common problem.

Government is recommended to take the lead in coordinating various stakeholders for CAT. It should further promote QF, and establish mechanisms to enable credit accumulation on a lifelong basis. It should review CEF's policy details, including the range of eligible subjects and the amount of entitlement for each eligible applicant. Employers are recommended to provide flexible working hours for employees pursuing training or further study.

Keywords: continuous professional development, lifelong learning, organisational learning

ISBSS-4572
The Industrial School of the Nineteenth-Century America

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Lowell in Massachusetts has a special place in labor history of America. The City of Lowell, formed in 1820s when cotton mills were built there, is important in several ways. Lowell was the first place where factories were built and cotton mills went into operation in large scale and women emerged as a labor force. Lowell led the golden age of cotton industry in the mid decades of the nineteenth century. Lowell's success was indebted to the so-called "new labor system"(Wright iii), which included adoption of modernized machinery and new mode of production, and quality workers. Towards the end of the century, however, the cotton industry declined with the over-growth of the industry and growing competition, with which the fame of Lowell as the city of cotton gradually declined. The growth and decline of Lowell has drawn attention from various social perspectives, such as emergence of factory labor, introduction of women as labor force, and the beginning of labor movement. In addition, the writings of mill women of Lowell have interested many readers with their implications about the meaning of work in human life.

The life and writings of some of those women who worked in the cotton mills of Lowell have attracted great interest not only of the contemporary but also of modern readers. Lucy Larcom, known as working-class woman poet, though she worked in the factory in Lowell relatively brief period of time, is known as a representative person of mill women. Harriet Robinson became known after she actively participated in women's suffrage and abolition of slave. Sarah Bagley was one of the editors of *Lowell Offering*, the first magazine edited and published by women workers in America, and she later worked as a labor union activist. In particular, Larcom and Robinson grew up in similar background, began to work in a factory at very young age, and made efforts to "expand" their life even under hard circumstances, and later became writer and social activist. These two women, when they were quite old, look back and wrote about their life in Lowell's cotton mills during the golden age of cotton industry. Their writings are good example that clearly shows what it meant to be a mill woman. Robinson's *Loom and Spindle*(1898) Larcom's *New England Girlhood, Outlined from Memory*(1889), and "Among Lowell Mill Girls: A Reminiscence"(1881)are not just

individual memory of the mill life in Lowell, but a collective memory of the mill women. This paper will investigate the meaning of being mill women in Lowell through their writings.

The factory labor in Lowell had some negative sides, including particularly “long working hours, closed workroom, crowded boarding house”(Abbot 21). Nevertheless, it also had many positive sides for which many mill women called it “idyllic work”(Eisler “Introduction 40) and thought Lowell “Industrial Eden”(Rybicki 16). Lowell was not just called Eden simply because people in Lowell had less strict standards about their working conditions which may seem horrible to modern people. The more fundamental reason why Lowell seemed an Eden to many mill women was closely related to the special experiences that they were able to have there. The writings of Larcom and Robinson that I focus on in this article tell clearly what those special experiences are. Their writings were all written when the cotton industry was declining and the working conditions in the cotton mills were worsening in the later decades of the nineteenth century. Their writings are full of nostalgic feelings for the past when they worked at the mills at young age. Therefore, Robinson in her writing describes herself as “a solitary traveller revisiting the scene of youth, and seeing with young eyes a city and a people living in almost Arcadian simplicity”(1-20). A similar kind of nostalgic feelings is also found in Larcom’s writing.

The nostalgic feelings for the past of Lowell found in the writings of Larcom and Robinson are about special intellectual experiences that were shared by many mill women of the day. Both of them claim that Lowell had two distinctive characteristics which set it apart from other industrial cities. One is that Lowell adopted so-called ‘Lowell production system’ which included the idea that corporations should have souls. The other is that among mill women in Lowell were “the first who showed any visible sign of mental cultivation”(LS 7). What Robinson emphasizes through this statement is the special experiences that young women of New England had in Lowell. As Wright summarizes well, in *Loom and Spindle* Robinson emphasizes that women of New England did not come to Lowell simply to make money, but they felt that “they should continue the cultivation of their minds, especially under the broadening influences of mental contact”(iv) and “the destiny of the factory [was] ever to reach down and lift people up out of lowly into higher conditions.”(v) In short, Lowell was not just a place where quality cotton products were manufactured, but a place which attracted high quality women with strong intellectual curiosity and helped them realize what they want.

About the people in New England of the nineteenth century, Robinson says they were “moral and religious”(LS 3) Most of mill women in Lowell grew up in strong puritan backgrounds

and were deeply religious. Some corporations stipulated that all employees should attend church, but most of them attended church voluntarily. Religion was a one thing that strongly tied both corporations and workers together. Not only women of New England were religious, but they were “well-educated and virtuous,”(ALM 594), as Appleton, who was very close to Mr. Lowell, says. Larcom also says these women of New England thought “idleness is disgrace”(ALM 600). In short, they were diligent and saving.

To women with these characteristics, Lowell provided opportunities for intellectual stimulation and self-development. In other words, Lowell served as a school for them. Walkowitz says that Lowell in 1830s when Larcom worked there was “like a boarding school for young ladies”(469). Robinson also calls Lowell’s factory “industrial school” and says “Labour is education, is the teaching of wise political economist”(LS 215). This means that Lowell performed an educational role to the women who came to work there by making them reflect over their life and help them develop their life. Robinson says that through working in Lowell, “For the first time in this country woman’s labor had money value,” and points out that “woman had begun to earn and hold her own money, and through its aid had learned to think and to act herself.” She also emphasizes that “Even the time of these women was their own(LS 69).” Though mill women did not have much free time after long hours of working, they spent that little time in the activities for self- development.

According to Robinson, mill women in Lowell become independent of men by accomplishing economic independence by working and having some free time that they dispose of freely. This is the most important thing that factory labor in Lowell provided for women workers there. Robinson says, “the operative is not only ‘capable of virtue,’ but also capable of self-cultivation”(LS 61) by working in Lowell. This means that Lowell’s women workers was able to overcome the traditional ideas about womanhood which the male-dominated nineteenth-century American society took for granted,—that is, women are inferior to men and their proper social role is to help men. Mill women in Lowell learnt to see themselves independently and actively felt ambition for self-enlargement. Therefore, Robinson says “the cotton factory gave the first impetus towards uplifting the social status of the working men and the working women of New England, if not of the whole country”(LS 216). They did not consider Lowell, where monotonous work repeated every day, as the ultimate destination of their life, and continued to search for new opportunities in life; once they fulfil the goal they looked for in Lowell they left it for new possibilities in elsewhere. For this reason, many of the mill women of Lowell worked there only for a short period of time, and Larcom says “This feeling, that they were at work in the mills for a little while, only to accomplish some special purpose, gave them contentment, without any sacrifice of

independence”(ALM 609). Therefore, the mill women worked there later expanded their life as “teachers, missionaries, artists, authors”(ALM 610).

About the special atmosphere Lowell created, Larcom says, “A desire for knowledge, and the mental activity resulting therefrom, made themselves felt everywhere”(ALM 600). Beside the high wage that Lowell mills offered, young women from all over New England came to Lowell motivated by the educational opportunities that Lowell offered. Robinson says, “the cotton factory was the means of the early schooling of so large a number of men and women, who, without the opportunity thus afforded, could not have been so well mentally developed”(LS 40). The mill women in Lowell were able to use the circulating library which was not available in country areas of New England. From the library they borrowed newly published books or novels for certain period of time at low expenses. It was strictly prohibited to bring books into workplace, but it was a common scene that many of them brought some pages they tore from a book, or a piece of paper on which they copied from books, and posted them on the worktable to read or memorize them.

One thing that was very popular with mill women was evening lectures. In particular, Lyceum Lecture, which was a combination of entertainment and lecture, was often held in Lowell, and to this event such well-known people as Ralph W. Emerson, John Whittier, John Quincy Adams and Edward Everett came as speakers. A.P. Peabody, Harvard Professor who often visited as a speaker Lowell Hall, where the event was often held, describes the atmosphere of the lecture hall.

... the Lowell Hall was always crowded and four-fifths of the audience were factory girls. When the lecturer entered, almost every girl had a book in her hand and was intent upon it. When he rose, the book was laid aside and paper and pencil taken instead. . . I have never seen anywhere so assiduous note-taking. No, not even in a college class, as in that assembly of young women, laboring for their subsistence. (from LS 74-75)

In addition, in Lowell many evening classes were offered that could quench the intellectual thirst of mill women.

As mentioned before, one of the most distinctive characteristics of Lowell mill women was the strong motivation and desire for self- development. They spent whatever little spare time for activities for self- improvement even after long hours of hard work, and Improvement Circle is a good example of such tendency. The circle meeting was begun as informal gathering for sharing ideas and later it developed into sharing of writings, and eventually into magazine entitled Lowell Offering. The magazine was published only some short years between 1840 and 1844. It was the first magazine to be edited and published by mill women

in America, for this reason it became a topic of great talks in New England area. This magazine featured personal reflections over mill women's life and work, but new ideas about womanhood and work, and the various ideas that later surfaced in labor movement. Among 70 contributors to this magazine were included such writers and social reformers as Larcom and Robinson, and Bagley. Harriet Martineau, when she visited Lowell in 1830s and was given a copy of Lowell Offering, she was greatly impressed by it after reading it. After she returned to England she persuaded Charles Knight, a publisher, and had selections from Lowell Offering be published into *Mind Amongst the Spindles: A Selection from the Lowell Offering* in 1844. In addition to Lowell Offering, several magazines were published by mill women, and they often introduced some radical ideas about labor movement.

The nineteenth century American society had ideas prejudiced against women and manual working. In spite of this, mill women took a strong pride in being a woman and a mill worker. Larcom describes the pride mills girls had for their work as follows:

It seemed a wonder, to look back upon it, how they accomplished so much as they did, in their limited allowance of time. They made and mended their own clothing, often doing a good deal of unnecessary fancy-work besides. They subscribed for periodicals; took books from the libraries; went to singing-schools, conference meetings, concerts, and lectures; watched at night by a sick girl's bedside, and did double work for in the mill, if necessary; and on Sundays they were at church, not differing in appearance from other well-dressed and decorous young women. (ALM 599)

Larcom's writing that looks back her factory life in Lowell is full of a strong pride in what she accomplished there. Robinson also takes the same kind of pride when she says, "These women were all self-made in the truest sense.... A woman ought to be as proud of being self-made as a man; not proud in a boasting way, but proud enough to assert the fact in her life and in her works"(LS 95). Both Larcom and Robinson admit that what helped them to be a writer and a social activist was the experience of working in Lowell. It is obvious that this was also true of other mill women of Lowell. About this Robinson says, "into whatever vocation they entered they made practical use of the habits of industry and perseverance learned during those early years, and they have exemplified them in their stirring and fruitful life"(LS 94).

The experience of working in Lowell is important in that it was the main force that helped them to expand their life, and to change their ideas of womanhood. When Lowell was full of the mill women who had strong motivation and desire for self-development, it formed a unique community of women. Dublin points out that three things helped to create such a unique community of women: work system, boarding house, homogeneity(78-85). As

mentioned earlier, many of mill women worked briefly in Lowell. When a mill woman left Lowell, the empty workplace was always filled by a new comer. Then an experienced woman helped the new comer as a 'partner' and taught skills to her as in apprentice system. For this reason, there developed a strong bond between the partners, which ultimately helped to solidify community spirit of women in Lowell. Beside, that they lived together in boarding houses also helped to create the community of women. In addition, the homogeneity of mill women also played an important role. They all grew up in Puritan backgrounds and there was not much difference in age and skills among them and they paid almost equally. Therefore, these mill women felt a strong bond among them and helped one another if needed, as Larcom explains in *New England Girlhood*. This kind of community spirit became a major force for them to go strike and march streets when the working conditions in the mills were worsened.

The collective protest of mill women, based on community spirit, against wage cut and long working hours requires one to pay attention to their new ways of looking at womanhood and work. For many mill women who were experiencing the kind of life that they were the masters of their own life, wage cut did not mean simply a reduction of income. It was a threat to "their sense of self, of their own worth and dignity"(Dublin 87).

Robinson says that when the mill labor was first introduced for the first time in America, there was, between mill owners and mill women, "a feeling of respectable equality between them"(LS 71). It was one of the fundamental ideas of benevolent paternalism that corporations and workers are mutually dependent on each other. However, wage cut seriously damaged this kind of mutual dependence. Before the wage cut, mill women did not have to work all the year round to make a living, and were able to visit home or rest if they wanted. With wage cut, they felt deprived of this kind of economic freedom; they thought they became economically enslaved to their employers. When they felt thus cornered, they went on strike and marched streets. (Male) corporate owners blamed their behaviors "unfeminine," this means that the image of a benevolent father who cares for his daughter, was just a fiction. Benevolent paternalism was in its essence was nothing other than economic suppression of (female) workers by (male) businessmen. In this sense, mill women's protest against the worsening working conditions includes gender conflicts.

About the social implications of the mill labor, Larcom explains as follows:

The girls who toiled together at Lowell were clearing away a few seeds from the overgrown track of independent labor for other women. They practically said, by numbering themselves among factory girls, that in our country no real odium could be attached to any honest toil that any self-respecting woman might undertake. I regard it as one of the privileges of my

youth that I was permitted to grow up among those active, interesting girls, whose lives were not mere echoes of other lives, but had principle and purpose distinctly their own. . . They gave me a larger, firmer ideal of womanhood. (NEG 196)

Mill labor in Lowell helped women to take pride in their work by allowing them to achieve economic independence, and to provide motivation to search for a better life, and to give an opportunity to reflect over women's desolate social situations through community spirit of women. Therefore, Larcom's statement that "everything about us was educating us to become true children of the Republic"(ALM 602) can be understood in this context.

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**An Application of the Attribute Hierarchy Method to the Cognitive
Diagnosis of Algebraic Reasoning Abilities**

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Abstract

In response to the call for effective teaching, the proper remedial instruction designs should be developed. To complete the mission, it is necessary to recognize what a student has mastered and has not mastered in a specific subject domain. Therefore, it is necessary to provide specific diagnostic information from daily formative assessments regarding the individual student's educational needs. In the past decades, a number of cognitive diagnostic models (CDMs) or techniques have been developed to evaluate students' mastery status of abilities in a specific subject domain. However, the feasibility of the application of a chosen CDM to a given subject domain is not thoroughly studied. The attribute hierarchy method (AHM) is a psychometric procedure for transforming students' item response patterns into a set of attributes/abilities patterns on the basis of the cognitive model underlying the task performance. In particular, the attribute hierarchy common in mathematics can be integrated into the AHM and the artificial neural network technique is utilized to calculate student's ability mastery probability without probabilistic model fitting. In this paper, the AHM was adopted to explore the attribute functioning and the group classification with particular attribute patterns for specific remedial instruction from an existing database of algebraic reasoning ability. The data was collected in the Computerized Algebraic Reasoning ability Test administered to 5th and 6th graders in Taiwan. The promising potential and feasibility of cognitive diagnosis to algebraic reasoning abilities were also discussed.

Keyword: Remedial Instruction, Cognitive Diagnosis, Attribute Hierarchy Method, Algebraic Reasoning, Hierarchy Consistency Index

1. Introduction

Mathematics is regarded as the critical component for individuals to make logical decision in their daily lives and careers (NCTM, 2000; Schoenfeld, 2002). Moreover, algebra is one of the broad parts of mathematics. It deals with the relations and properties of quantities and uses letter as well as other symbols to represent numbers, especially in equations to solve problems or to express general mathematical relationships. However, at the 5th and 6th grades in Taiwan, mathematical learning is at the transition from arithmetic to algebra. The

transition has proven difficult for students, and it is now widely recognized that students need to engage in algebraic reasoning earlier (Driscoll, 1999; Kaput, 1999; NCTM, 2000). Thus, Taiwanese students' challenges in algebra result not only from algebra curricula that lack meaning and coherence, but also from elementary curricula that fail to develop students' abilities to reason about complex additive and multiplicative relationships (Smith & Thompson, 2007). Because of the difficulties of students in learning algebra, the appropriate information about what abilities students have mastered in algebraic reasoning and more importantly, what abilities students haven't master in algebraic reasoning is critical for the proper remedial instruction that should be supplied.

Through the data analysis of the Computerize Algebraic Reasoning Ability Test (CART, Su & Hung, 2015), there are three purposes for this study including (a) identifying the cognitive model underlying the algebraic reasoning performance of the fifth and sixth graders in Taiwan and assessing the model-data fit, (b) evaluating the feasibility of the application of the AHM to the CART data, and (c) recognizing the specific groups describing the particular attribute profiles of the fifth and sixth graders.

2. Literature Review

2.1 Algebraic Reasoning

Algebraic reasoning pervades all of mathematics and is essential for making mathematics useful in daily life (Van de Walle, 2004). Kaput (1998) identified five interrelated forms of algebraic reasoning, as below: generalization and formalization; manipulations of symbols; the study of structure and systems abstracted from computations and relations; the study of functions, relations, and joint variation; and modeling language. Algebraic reasoning is characterized by its generality and by the role that symbolic expressions play in stating general relationships, comparing and manipulating them, and facilitating many numerical evaluations (Smith & Thompson, 2007). Algebraic reasoning involves forming generalizations from experiences with number and computation, formalizing these ideas with the use of a meaningful symbol system, and exploring the concepts of pattern and function (Van de Walle, 2004).

2.2 Cognitive Diagnostic Assessment

To realize cognitive diagnosis, two processes are involved: (a) domain analysis of assessment items to identify their associations with cognitive attributes of interest, and (b) statistical modeling of these attributes and tasks. The first process, assessment domain analysis, is typically carried out by content experts to identify the attributes probed by the assessment and to establish an item-by-attribute matrix called a Q-matrix (Tatsuoka, 1983). For example, the

hypothetical Q-matrix is given as follow $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 1 \end{bmatrix}$. This is a test consisting of two item and assessing three attributes. Row 1 indicates the first item measures A1 and Row 2 means the second item measures both A2 and A3. In most mathematical situations, to reach a correct response of an item, all the attributes assessed by the item must be mastered by the students.

In the second process, there are some cognitive diagnostic models (CDMs) developed to classify the subjects into one of several different categories representing their attribute profiles and to evaluate the capability of cognitive diagnosis of each item. Several CDMs and other procedures have been proposed, including the attribute hierarchy method (AHM, Leighton, Gierl, & Hunka, 2004). Because of the procedural nature and the hierarchy of the attributes implied in algebraic reasoning, the AHM is taken in this paper.

2.3 The Attribute Hierarchy Method

As mentioned earlier, the AHM also involves two stages: cognitive model development and statistical pattern recognition. Attributes could be viewed as a set of specific skills, knowledge, competencies, mental processes, and strategies that students should possess or master to answer an item correctly (Leighton & Gierl, 2007).

2.3.1 Cognitive Model Development

In the AHM, there is a basic assumption, called the attribute hierarchy that attributes form a hierarchy defining the direct prerequisites or other direct dependencies among the identified attributes for a given test. The attribute hierarchy serves as a cognitive model of test performance that refers to a simplified description of human problem solving strategy on the test (Leighton, Gierl, & Hunka, 2004; Leighton & Gierl, 2007; Gierl, 2007). In this paper, the terms, the cognitive model and the attribute hierarchy, are exchangeable.

2.3.2 Statistical Pattern Recognition



Fig. 1: An example of a cognitive model

An attribute hierarchy example is demonstrated with Fig. 1. In the AHM, there are some matrices used. The adjacency matrix (A) of order (k, k), k is the number of the attributes, defines the direct relationship between attributes. In Fig. 1, A1 is a prerequisite attribute to attributes A2 and A3, meaning that the students are assumed not to possess attribute A2 and

A3 unless A1 is mastered. The A matrix of Fig. 1 is given below: $A = [a_{ij}] = \begin{bmatrix} 0 & 1 & 1 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$.

The reachability matrix (R) defines the direct and indirect relationships among attributes. The

R matrix of Fig. 1 is given below: $R = [r_{ij}] = \begin{bmatrix} 1 & 1 & 1 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$. The first row represents that students

do not possess A2 or A3 unless A1 is mastered. All possible items are described via the incidence matrix (Q). In this example, the Q matrix is given as follow:

$Q = [q_{ij}] = \begin{bmatrix} 1 & 0 & 0 & 1 & 1 & 0 & 1 \\ 0 & 1 & 0 & 1 & 0 & 1 & 1 \\ 0 & 0 & 1 & 0 & 1 & 1 & 1 \end{bmatrix}$. However, some items in the Q matrix violating the

attribute hierarchy. After removing them from the Q matrix, the reduced Q matrix is

generated (Q_r matrix). The Q_r matrix of Fig. 1 is given below: $Q_r = [q_{ij}] = \begin{bmatrix} 1 & 1 & 1 & 1 \\ 0 & 1 & 0 & 1 \\ 0 & 0 & 1 & 1 \end{bmatrix}$.

The Q_r matrix mean all the possible items, and meanwhile, all the “expected” students’

attribute patterns following the Fig. 1 (E) is given below, $E = [e_{ij}] = \begin{bmatrix} 0 & 1 & 1 & 1 & 1 \\ 0 & 0 & 1 & 0 & 1 \\ 0 & 0 & 0 & 1 & 1 \end{bmatrix}$,

simply adding the attribute pattern $[0 \ 0 \ 0]$ to the Q_r matrix. The set of all “ideal” response patterns resulting from all separate rows of matrix E can be calculated assuming the students made no “slip.” A slip means that a response to an item is consistent with the attributes assessed by the item and mastered by the student.

To compute the probability that a student master a specific attribute, called posterior probability of mastery (ppm, Roussos, DiBello, Stout, Hartz, Henson, & Templin, 2007), an artificial neural network approach is utilized (Gierl, Cui, & Hunka, 2007). The network learns how to make inference of all the observed item response data by being “trained” with a set of training data. Here, training data consist of output data, the set of expected students’ attribute patterns, and the input data, the set of corresponding ideal response pattern given an existing test. After training, the network serves as a pattern recognition tool that given observed item response data as input data and then the output data is the corresponding attribute patterns, each cell of each pattern presented by a zero-to-one value meaning the probability that individual student masters a specific attribute. If the network learns the associations well, a small error of misclassification is produced (Rumelhart, Hinton, & Williams, 1986a, 1986b).

3. Methodology

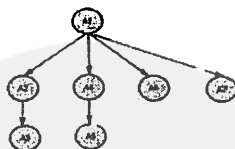


Fig. 2: The cognitive model of the CART

The computerized algebraic reasoning test (CART, Su & Hung, 2015) is administered to 270 5th and 6th graders with form A and 260 5th and 6th graders with form B. Form A and Form B both consist of twenty items. Based on the literature review on algebraic reasoning and the framework of Taiwanese elementary school mathematics, there are four types of the CART items including the sequence representation, the chart representation, the wording representation, and the symbol representation items. After recoding by a graduate student supervised by the CART designer, the attributes probed by the CART, the cognitive model and the relevant Q-matrix of the CART are identified.

The cognitive model with eight attributes is demonstrated in Fig. 2. There are three types of attributes, including treating calculation steps, the arithmetic abilities, and the representation abilities. A1 is the prerequisite attribute to all the other attributes required in the CART. A1 includes all the mathematics knowledge taught before the 5th grade level such as the four fundamental operations of arithmetic of integers. A2 means the abilities to do single or double operation treatments in a linear equation. A3 is the abilities to do triple or more operation treatments in a linear equation. A2 and A3 both belong to treating calculation steps, and A2 is prerequisite to A3. A4 includes the low level arithmetic abilities (i.e., involving the abilities to do the arithmetic about the one-digit or two-digit integers and one-digit decimals, to operate below three-step arithmetic, and to reason the adjacent terms given a sequence) and A5 is the high level arithmetic abilities (i.e., the abilities to do the arithmetic about three-digit integers or more and two-digit decimals or more and to do four-step arithmetic or more, and to reason the further term given a sequence). A4 and A5 both belong to treating calculation steps, and A4 is prerequisite to A5. A6, A7, and A8 all correspond to the representation abilities. A6 is the ability transforming number sequence patterns to form equations or functions, A7 relates to the ability transforming graphs, including statistical charts, to create equations or functions, and A8 represents the ability transforming wording descriptions, operators, and algebraic symbols to construct equations or functions. Since there are no obvious hierarchical relationships with each other in A6, A7, and A8, this type of attributes is divergent.

Given the CART data collected, the identified CART cognitive model, and the CART Q-matrix constructed, the goodness-of fit statistics used in SEM are utilized to investigate the associations between the attributes. The justification of the hierarchy in the CART is checked by the model-data fit index, the hierarchy consistency index (*HCI*, Cui & Leighton, 2009). The *HCI* is a person-data fit index examining whether students' actual item response patterns match the expected response patterns based on the hierarchical relationships among attributes measured by test items. Given the identified CART cognitive model, a student is considered to have mastered all the required attributes for an item when the item is correctly answered. In turn, the student is expected to correctly answer all those items that require the subset of attributes measured by the correctly answered item. The *HCI* for student *i* is given by

$$HCI_i = 1 - \frac{2 \cdot \sum_{j \in S_{correct_i}} \sum_{g \in S_j} X_{ij} (1 - X_{ig})}{N_{c_i}},$$

Where

$S_{correct_i}$ is an index set that included items correctly answered by student *i*,

X_{ij} is the student *i*'s response (1 or 0), where item *j* belong to $S_{correct_i}$,

S_j is an index set that includes item requiring the subset of attributes probed by item *j*,

X_{ig} is student *i*'s response (1 or 0) to item *g* where item *g* belongs to S_j , and

N_{c_i} is the total number of comparisons for all the items that are correctly answered by student *i*.

The *HCI* has the property of ranging from -1 (completely misfitting) to +1 (perfectly fitting). In Cui and Leighton (2009), a nonparametric statistic by using simulation data was selected to search a *HCI* cutoff distinguishing normal or misfitting patterns. Following Cui and Leighton's criterion, the *HCI* greater than 0.06 means well-fitting and the *HCI* smaller than -0.43 indicates poor-fitting.

After the identified cognitive model is validated, the neural network algorithm built-in MATLAB is used to conduct the AHM for obtaining the ppm of each attribute of each student. When the ppm for an attribute for a student is greater than 0.5, the student is declared a master of the attribute, and conversely, when ppm is smaller than 0.5, the student is declared a nonmaster of the attribute (Roussos, DiBello, Stout, Hartz, Henson, & Templin, 2007). To examine the feasibility of the AHM application, investigating the overall shapes of the univariate distributions of the attribute mastery probability estimates obtained from the AHM is useful. With a cutoff attribute mastery probability of 0.5, an ideal situation is that these univariate distributions are U-shaped indicating that very few students are associated with attribute mastery probabilities around 0.5.

Finally, for remedial information, the groups with particular attribute patterns are concerned. For example, the groups with particular attribute patterns mean the type of students who possess the abilities to do triple or more operation treatments in a linear equation, but not master the high level arithmetic abilities (i.e., $A_3=1$ and $A_5=0$).

4. Results

4.1 Validation of the Cognitive Model

The associations among the CART attributes are validated with the application of SEM. Table 1 summarizes the results of the goodness-of-fit statistics and the relevant well-fitting criteria. It is indicated that the cognitive model serves as a well-fitting model to the CART data because all the goodness-of-fit statistics satisfy the relevant well-fitting criteria.

Table 1: The goodness-of-fit statistics of the cognitive model of the CART

Statistics	Well-fitting criterion	Form A	Form B
<i>RMR</i>	$< .025$.009	.008
<i>CFI</i>	> 0.90	.949	.955
<i>IFI</i>	> 0.90	.953	.958
<i>TLI</i>	> 0.90	.927	.934
<i>RMSEA</i>	< 0.05	.030	.032

The results for the *HCI* are shown in Table 2. It is suggested that more than 80% students are well-fitting to the cognitive model, the attribute hierarchy, and very few students are poor-fitting (2% to 6%). Based on the results of the SEM and the *HCI*, the cognitive model identified in this paper is well-fitting to the CART data, and moreover the attribute hierarchy assumption can be confirmed confidently.

Table 2: The percentage of the well-fitting and poor-fitting students

	Form A	Form B
<i>HCI</i> > 0.06	84.81	83.46
<i>HCI</i> < -0.43	3.33	5.38

4.2 Feasibility of the Application of the AHM to the CART Data

Fig. 3 depicts the overall shapes of the univariate distributions of the attribute mastery probability estimates obtained from the AHM. Because of the attribute hierarchy, the difficulties of separate attributes might be different. More specifically, the low level attributes such as A_1 , A_2 , and A_4 are easier than the high level attributes such as A_5 and A_6 , and the shapes of the easier attributes are left-skew more obviously.

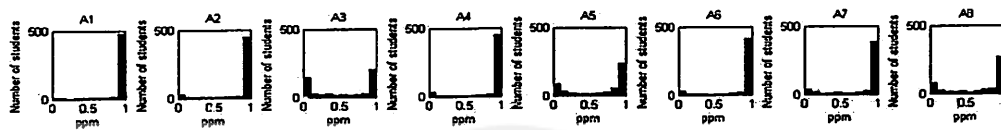


Fig. 3 The frequency histograms of the eight attributes in the CART

Roussos, DiBello, Stout, Hartz, Henson, and Templin (2007) suggested an indeterminate interval, $[0.4, 0.6]$. If the fewer students fall into the region, the more effectual the AHM can discriminate the attribute masters and nonmasters. Table 3 suggests that there are few students falling into the region across all attributes, indicating the AHM truly can separate the masters and nonmasters on each attribute. As a whole, the average percentage is equal to 4.01, implying that over 95% students can be classified confidently on each attribute.

Table 3: The percentage of the students falling into the indeterminate interval for each attribute and the difficulty of each attribute

	A1	A2	A3	A4	A5	A6	A7	A8	average
percentage	2.26	2.64	6.79	1.32	5.85	2.26	4.72	6.23	4.01

4.3 Identifying the Groups with Particular Attribute Patterns

As mentioned earlier, the groups with particular attribute patterns need specialized remedial instruction. Obviously, there are almost one fourth students mastering A3 but not mastering A5, and more precisely, there are about one fifth students mastering both A3 and A4, but not mastering A5. Similarly, there are approximately one fourth students mastering A5 but not mastering A3, and in detail, there are about one fifth students mastering both A5 and A2, but not mastering A3. For the representation abilities, the students not mastering one attribute but mastering the other two attributes are discussed. In table 4, more students belong to the group not mastering A8 (15.47%) than those belong to the other two groups (6.42% and 3.21%). For different groups, the proper remedial instruction should be supplied to reach the effective teaching.

Table 4: the percentage of the students with particular attribute patterns

pattern	percentage	pattern	percentage	pattern	percentage
A3=1 & A5=0	24.71	A3=0 & A5=1	26.41	A6=1, A7=1, & A8=0	15.47
A3=1, A4=0, & A5=0	3.21	A2=0, A3=0, & A5=1	3.01	A6=1, A7=0, & A8=1	6.42
A3=1, A4=1, & A5=0	21.50	A2=1, A3=0, & A5=1	23.40	A6=0, A7=1, & A8=1	3.21

5. Discussion and Conclusion

In this paper, the AHM is utilized to analyze the CART data, and the purposes of this paper are to (a) identify and validate the cognitive model of CART, (b) evaluate the feasibility of the application of the AHM to the CART data, and (c) identify the specific groups describing the particular attribute profiles. The results suggest that the cognitive model with three types of attributes proposed was validated using SEM and *HCI*. The application of the AHM to the CART data is feasible. The specific groups describing the particular attribute profiles are clearly classified.

There are still some limitations to this paper. First, the applications of the AHM to the existing test data seem workable but not perfect because the intents of the existing tests are not developed for cognitive diagnosis purpose. In future researches, the test items should be designed based on cognitive theories for the intent of the cognitive diagnosis. The diagnosis oriented data sets might be gathered to obtain the precise classification. Secondly, the assumptions of the attribute hierarchy in the AHM are the so strong constraints that the AHM might not be suitable to every situation for the cognitive diagnosis purpose.

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Meaning of Creativity: A Study of Teachers and Students' Conception of Creativity in Higher Education

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ABSTRACT

We are living in fast-changing times. Knowledge and skills are becoming obsolete much faster than in the past. Many scholars suggest that the current education systems and approaches cannot meet the demands of the fast changing economy and society. They feel that education institutes should put extra effort into promoting creativity education. However creativity is a relatively complex concept, and successfully fostering creativity in education demands a clear conception of what creativity and creativity education are. The objective of this paper is to (1) explore how teachers and students perceive the meaning of creativity and (2) identify reasons that contributed to teachers and students' conception of creativity in education. 18 teachers and 30 students from 10 animation programs were interviewed in this research. The findings showed that both teachers and students were having confused conception of creativity. The paper further concluded that the conception of creativity also be influenced by cultural development of the society.

Keywords: Creativity, Conception of Creativity, Cultural Influence on Creativity

1. INTRODUCTION

The British Government setup a taskforce in 1998 to review creative and cultural education. The result was a report, *All Our Futures: Creativity, Culture and Education*, that led to an intensive debate on creativity education. Sir Ken Robinson, Chairman of the taskforce, challenged the traditional education system, saying: "The educational reforms really needed now are actually being held back by the attitudes to education that many policymakers learned when they went to school – 20, 30, 40 years ago. Many seem to believe the way to the future is simply to do better than what we did in the past. The truth is we need to do something completely different for today's students" (2005:2). Education institutes should not limit themselves to knowledge transfer, but must also promote flexibility and openness for our students. Fostering creativity can help our students meet the future challenge (Cropley, 2001).

2. THE IMPORTANCE OF CREATIVITY IN EDUCATION

In the NACCCE report, it indicated that the education worldwide faced unprecedented challenges in the areas of economic, technological, social and personal. A rapid change of the nature of work from traditional industrial to knowledge and information calls for new type of workers. The expanding creative industries also have a demand for young people who can generate new ideas. The new pattern of work has a demand for young people to switch occupation and location much more than the past. The rapid development of technology has already dominated all areas of our lives. It offers tremendous opportunities for people to develop and transform, but on the other hand it might also harmful in the social, emotional and imaginative development. Both economic and technological changes are transforming the social landscape. These changes will affect the balance of relationships and responsibilities between generations. The traditional academic quality will not satisfy the demands of employers who emphasize powers of creativity, of communication, of empathy and adaptability. Creative abilities are needed to meet the challenges of economic, technological, social and personal development (1999). Nowadays, the employers demand people who 'can adapt, see connections, innovate, communicate and work with others' (NACCCE, 1997:14). Moreover, fostering creativity does not conflict with traditional education. Some scholars see creativity seeming to supplement conventional intelligence in promoting school performance (Sternberg & Lubart, 1995).

3. DEFINITION OF CREATIVITY

Creativity is difficult to define. Csikszentmihalyi described it as follows: "Creativity was recognized to be a complex, contested concept that is poorly theorized, as acknowledged in many accounts" (1999:313). Guilford (1971) saw 'creativity' as an ambiguous word. Child (1973) suggested that there does not exist a clear, unambiguous and widely accepted definition of creativity. Stein (1953) proposed that 'creation' is an activity which brings some things which are 'new' and which have 'utility'. Sternberg and Williams (1996) also had a similar thought, that creative ideas are both novel and valuable. Boden defined creativity is "the ability to come up with ideas that are new, surprising, and valuable" (Boden, 2004:1). Most of the scholars agreed that creativity involves thinking that is aimed at producing ideas or products that are relatively novel and compelling. (Kaufman & Sternberg, 2006).

The National Advisory Committee on Creative and Cultural Education (NACCCE) defined creativity as "imaginative activity fashioned so as to produce outcomes that are both original and of value" (NACCCE, 1999:30). The definition of creativity proposed by the NACCCE was based on the understanding of the nature of creative processes and this indicative definition aim to serve for education purposes. Creative processes always involve (1) thinking or behaving imaginatively; (2) the imaginative activity is purposeful; (3) the activity

must generate something original and (4) the outcomes must be of value to the purpose (NACCCE, 1999).

4. RESEARCHES ON STUDENTS' CONCEPTION OF CREATIVITY

Many scholars suggest that the current education systems and approaches cannot meet the demands of the fast changing economy and society. They feel that education institutes should put extra effort into promoting creativity education. However creativity is a relatively complex concept, and successfully fostering creativity in education demands a clear conception of what creativity and creativity education are (Jackson et al, 2006).

A study was carried out by Margaret Edwards, Chris McGlodrick and Martin Oliver (2006) in exploring the teachers' perspectives on creativity at Liverpool John Moores University and University College London in the period of 2002 to 2004. The research used a semi-structured approach and interviewed 32 academic staff from a range of disciplines and experiences. The general conclusions were that creativity was not a well theorized concept, though some participants could indicate their understanding of the complexity of this concept, most of the others had problems and confusion with this concept (2006).

Another study also conducted in the same period in the above universities mentioned with the participation of 25 students from various disciplines. Students were invited to participate in interviews and they were asked to explain their thoughts about creativity and to describe creative people or things. The result of the study showed that students had difficulty in explaining what they thought creativity was, and they were incapable of providing a coherent and integrated concept explaining the term creativity (Edwards, McGlodrick & Oliver, 2006). The above studies actually show that teachers and students generally having a confused conception of creativity. Although some of the participants might show a better understanding of the nature of creativity, the overall indications were that participants could not give a clear and coherent explanation of what creativity was.

5. RESEARCH APPROACHES AND METHODOLOGY

The research aims to explore how teachers and students perceive the meaning of creativity in education. Qualitative research emphasis on discovery and description. This study employed qualitative research approach to collect, analyze and interpret data. 18 teachers and 30 students from animation programs of 10 universities in Beijing were invited to participate in the study. In qualitative research approach, the selection of participants in a study is based on purposive sampling (Merriam, 1998). Beijing is the capital of China and it is the most influential province in China. It is also the earliest province to develop creative industries thought and policies.

Data was collected using face-to-face semi-structured interviews for teachers and their corresponding final year supervisees. Each institute identified two teachers and their final year project supervisors in the academic year. Each teacher also proposed two supervisees to attend separate interviews. Two pilot interviews were conducted prior to the actual interviews and the questionnaire was improved based on the deficiencies of the pilot interviews identified. For various reasons, the study successfully interviewed 18 teachers and 30 students. All the interviews were then transcribed into text and inputted to the qualitative data

6. RESEARCH FINDINGS

The questionnaires for both teachers and students included direct questions on the interviewees' understanding of the term creativity, and some more follow-up questions on this point have been asked in most of the interviews. However, very limited information related to creativity was collected from the interviewees, and most of them replied with very vague statements. Below is a summary of the findings in the study.

First, no student provided any definition for the term creativity. A majority of students suggested that creativity should include something novel or something different from the others. A few students also emphasized that ideas could only be considered as creative if they were expressed and realized. Second, most of the teachers mentioned one or more subjects in their programs for nurturing students' creativity, however no details were provided by the teachers as to exactly how these subjects help in developing students' creativity. Moreover, no common pattern can be identified from these suggested subjects. Third, some teachers considered that the curriculum for creativity teaching should involve some kind of teaching methodologies embedded in the daily classes instead of some specific subjects in creativity training. Fourth, a majority of students mentioned some subjects that they considered helpful for nurturing creativity. These subjects include taught subjects like visual aesthetics, character design, body language and script writing. Almost half of the students suggested that script writing was helpful in developing their creativity. Some of the students also mentioned that production subjects were most helpful in developing their creativity, because these subjects allowed them to create some sort of story and characters, and they could also deal with practical problems. Fifth, in nurturing students' creativity, a criticism-free environment is very important for them to generate creative ideas. A majority of the teachers claimed that they would respect students' decisions and should not force students to adopt their suggestions in completing the students' projects. Moreover, other teachers have very diverse recommendations for nurturing students' creativity. Some teachers suggested students to absorb more knowledge, to develop independent thinking ability, aesthetic appreciation, synthetic ability, self-confidence, association ability, analytical ability, and multidisciplinary knowledge. Some of the teachers also suggested that it is important to help students find their

excitement, inspire and motivate them in exploration. Sixth, students did not express any unified idea on the way the teachers helped them to develop their creativity, but they had mentioned various ways that the teachers had been used to encourage them to be more creative. These include motivating and encouraging students, providing students with a supportive environment that allows their exploration, widening the scope of students in both cognition and knowledge, requesting students to look at things in different perspectives, and inspiring students by using different teaching approaches.

The major findings in this study indicated that some teachers believed 'novelty' and 'appropriateness' were two important elements of creativity, but most of the others had confused conceptions of creativity. It is interesting in the findings that students have some more comments on their understanding of creativity. Apart from novelty and appropriateness, students also suggest that creativity is personal, free from routine, incremental and common to all, etc.

7. THE CULTURAL INFLUENCES ON THE CONCEPTION OF CREATIVITY

In comparing the Chinese teachers and students with their UK counterparts on the conception of creativity, I found that both groups share the same confusion and hesitation on the conception of creativity. The lack of understanding of the conception of creativity in higher education institutes is an important issue if we want to foster creativity in the higher education system.

Although there have been many common suggestions on the conception of creativity both from teachers and students, I can see some important suggestions from participants in the UK studies that have not been addressed by the Chinese participants like, 'an imagination of expression', 'risk', and 'independence'. On the other hand, the frequently mentioned 'appropriateness' or 'value' that emerged in the Chinese context was not mentioned by the UK students.

As suggested by Kim (2007), creativity is influenced by various factors. Apart from the personal domain, creativity is also affected by other social factors and culture. Owing to the difference in the cultural context, creativity would be understood and valued differently (Paletz & Peng, 2008). As culture can be understood as a set of conventionalized learned routines, and it serves to coordinate the social behaviors of the individuals within that society (Chiu & Hong, 2006). The different conception of creativity by the Chinese participants might be explained in part by their cultural background.

Culture can be defined as “an historically transmitted pattern of meanings embodied in symbols, a system of inherited conceptions expressed in symbolic forms by means of which men communicate, perpetuate, and develop their knowledge about and attitudes toward life” (Geertz, 1973, p.89). Niu and Sternberg (2003) proposed in cross-cultural studies, the Core Societal Values shall be studied in order to understand the differences between social groups with respect to individualism and collectivism. Western societies that favor individualism tend to emphasize an independent perspective of the self. Behavior and value judgments are mainly make reference to the individual’s internal thoughts instead of his or her relationship with others or with society at large. As Asian cultures tend to value collectivism over individualism (Kim et al, 2011), people in Eastern societies incline to favor an interdependent perspective of the self and try to become part of various personal relationships. The societal values, as suggested by Niu and Sternberg (2003), shape individual creativity through (1) influencing the understanding of creativity, and (2) these values further influence individual creative performance.

Moreover, Confucianism dominates the development of Asian cultures (Chaves, 2002), and serves as the point of reference for the core values, traditions, ethical and moral foundations of Chinese society (Kim et al, 2007). A Confucianist world view tends to prioritize the acquisition of societally-ordained “correct” knowledge on education and limits initiatives in generating new ideas (Ho & Ho, 2008; Martinsons & Martinsons, 1996). This might explain why the Chinese teachers and students interviewed in this study tended to emphasize knowledge acquisition and appropriateness in their program objectives and conceptions of creativity.

8. CONCLUSIONS

As suggested by many scholars (Jackson et al, 2006) if teachers do not have a clear conception of creativity, it is very difficult for them to foster creativity in their teaching. A study was carried out by Margaret Edwards, Chris McGlodrick and Martin Oliver in exploring the teachers’ perspectives on creativity at Liverpool John Moores University and University College London in 2002. The general conclusions were creativity was not a well theorized concept, though some participants could indicate their understanding of the complexity of this concept, most of the others had problems and confusions in this concept. A similar situation happened in the current study. Many students also found it difficult to articulate their understanding of creativity. Many students resorted to describing their understanding by using various examples.

Many educators see fostering creativity in the classroom is very difficult. As some studies indicated, teachers prefer expected students’ responses in the class discussion instead of

unexpected students' responses that might disturb class progress (Beghetto, 2007). Some studies also found that sometimes teachers prefer less creative students for the reason that they feel creativity is associated with nonconformity and disruptive behavior (Crompton, 1992; Dawson, 1997; Scott, 1999). Moreover, in one study, teachers claimed that they enjoyed working with creative students but when they responded to the details that were related to creative attitudes, they showed their dislike of the type of attributes that normally were affiliated with creative students (Westby & Dawson, 1995). All the above studies actually show teachers might not have a good conception of creativity (Sternberg & Lubart, 1999; Osborne, 2003). As suggested by many scholars (Jackson et al, 2006), if teachers do not have a clear conception of creativity, it is very difficult for them to fostering creativity in their teaching.

It has been identified in the findings that most of the participants did not have a clear conception of creativity. Although some of them related novelty to creativity, and a few of them also talked about appropriateness as one of the factors, the overall conception of creativity is very confused. There are multiple reasons that contribute to this situation.

As Chinese culture always values collectivism more than individualism, the nature of creativity that emphasizes questioning assumptions and risk-taking might not always be appreciated. The cultural influence might also affect schools in undermining the importance of creativity in education. From the previous findings, I have determined that neither teachers nor students could offer a clear articulation of their conception of creativity. This might be largely due to the fact that they never pay serious attention to the meaning of creativity. According to Niu's (2006) study, the first peer-reviewed journal article on creativity was published in 1983. Before 1995, there were fewer than ten publications in peer-reviewed journals on creativity and all of them were not empirical. This might further indicate the low level of perceived importance of creativity in China, at least until recently.

Teachers and students do not have a clear conception of creativity is due to the fact that the importance of creativity has been undermined in education, in work and in the society. However, I also found that teachers seldom directly declared that creativity is not important. Most of them see creativity as important in animation education, but they could not give details on what they have done to promote creativity in the course. I could conclude that animation teachers and students have confused conceptions of creativity, because society and schools do not really emphasize the importance of creativity.

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Finance

Roma

2015/07/22 Wednesday 17:00-18:00

Session Chair: *Prof. Narumon Saardchom*

ISBSS-4313

Firm Size, Ownership Concentration and Business Sector: The Influence to Credit Access Smes in Indonesia

Ratna Anggraini ZR | *Jakarta state University*

ISBSS-4569

Effect of the Suitability Rule on Investment Characteristics of Financial Consumers

Yang-Kyu Shiin | *Daegu Haany University*

ISBSS-4647

Reverse Stress Tests by Extreme Value Theorem for Clearinghouse

Narumon Saardchom | *NIDA Business School*

ISBSS-4681

The Effects of Agency Costs and Insiders' Shareholdings on Financing Choices

Shieh-Liang Chen | *Asia University*

Shiu-Chen Huang | *King Steel Machinery Co., Ltd.*

Yi-Mien Lin | *National Chung Hsing University*

ISBSS-4313

Firm Size, Ownership Concentration and Business Sector: The Influence to Credit Access Smes in Indonesia

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ABSTRACT

The one of important role of SMEs in economic development in Indonesia, Hill (2001) stated is a significant contribution of SMEs with regard to employment. Central Statistics Agency (BPS) 2009 showed the proportion of SMEs have 99.99% of the total businesses in Indonesia or as many as 52.76 million units, SMEs proved to account for 56.92% of the total Gross Domestic Product (GDP) of Indonesia, equivalent to Rp1.213,25 Trillion. Using three independent variabel: firm size, Concentration of ownership and business sector, this paper aimed to exploring the factor that has contribution on credit acces to solved the financial problem SMEs in Indonesia. Data of this research is primary data by distributing questionnaires to the respondents. Sample of this research is obtained from 78 SMEs companies in Bekasi West Java Indonesia. Using analysis which a technique development of multiple linear regression.

The results of this research, The size of company and the business sector affect the credit access, the concentration of ownership does not affect the credit access individually. Using F test The size of the Company, the concentration of ownership and the business sectors together affect the credit access is measured based on the perception of entrepreneurs for the company access to external capital.

Keywords: Small and Medium Enterprises, Financial problem, Credit Access

INTRODUCTION

European Central Bank Consultation (2011) which stated that credit access was ranked as the second most problems put pressure on SMEs in Europe. Even Survey World Business Enterprise Survey (WBES) carried out in 135 countries and covers up to 130,000 companies in 6 sub-region puts credit access as a matter of the greatest economic barriers with figures of 16.9%, outperforming other issues such as corruption, discrepancy political in stability and transportation. It is almost similar also be inferred from the Public Consultation on the

effectiveness of innovation support in Europe (2011), that the lack of credit access is a major factor inhibiting the activity of innovation and the introduction of innovations into the market.

RAM Consultancy (2005) stated that the restrictions on capital were divided into two, from the supply side, and the demand side. This triggers the magnitude of asymmetric information between SMEs and institutions that intend to provide loans. It is to be considered for creditors to lend SMEs head. SMEs resources for their own benefit.

Other characteristics that may affect credit accesses a business sector in which SMEs operate, because the business sector represents a risk that must be faced by SMEs. This has been stated by Punyasavatsut (2011), which states that the manufacturing company is considered to have a lower risk, have a debt to equity ratio that is higher than any other business sector. The business sector also determines the amount of tangible assets owned by the company that can be used as collateral, as an example, a manufacturing company has a number of tangible assets greater than a company engaged in the field of information technology, so that ccompany manufactures have easier access to funding from external parties. In addition, the business sector also affects the amount of funds needed by SMEs, and ultimately affects the creditor's decision to provide the necessary funds or not.

LITERATUR RIVIEW

Access to Capital

Capital is an important factor for the operation of a company in addition to other factors such as labor and skill. Difficult credit access is often a barrier for SMEs to start or expand their business. In general, credit access refers to the availability of supply to financial services at a reasonable cost (Claessens et al., 2006). Credit access can also be defined as the absence of barriers to price and non-price (Demirguc-Kunt and Levine, 2008). While the OECD defines credit access as a percentage of the company can use financial services if they wish. Reducing barriers to credit access external funding that prevents expansion of the company.

Firm size

The size of the company is a value that indicates the size of the company. There are a variety of proxy which is usually used to represent the size of the company, i.e. the number of employees, total assets, sales, and market capitalization. Assets are a measure of the magnitude or scale of an enterprise. Based on the Law of the Republic of Indonesia Number 20 (2008), Ministry of Finance No. 316/KMK.016/1994 dated June 27 (1994), So it can be concluded that the range of the size of SMEs in Indonesia which are classified as SMEs business is a business that has a net worth of more than 50 (fifty) million dollars to a maximum of 10 (ten) billion excluding land and buildings, has annual sales ranging from 300

(three hundred) million to 50 (fifty) billion dollars, and has a number of employees less than a hundred people. Wide enough range also allows SMEs established in the form of various entities, either incorporated or not. Hu and Schiantarelli (1994) find that firm size has positive influence on capital barriers; it is because the bank will be a greater risk when lending large amounts to little creditors than if you divide the number of loans to many lenders at once.

Concentration of ownership

Ownership of the company can be divided into two, namely the concentrated ownership and possession of the spread. La Porta et al. (1999), Claessens et al. (2000a), and Facio and Lang (2002) showed that the ownership of public companies in almost all countries is concentrated, except in the United States, Britain and Japan. Thus Indonesia is included in the group of countries that share ownership of public companies is concentrated. La Porta et al. (1999 and 2000) showed that concentrated ownership structure occurs in countries with a low level of corporate governance. La Porta et al. (1998 and 2000) found that a group of French origin countries (including Indonesia) has the highest concentration of ownership as compared to the three other groups origin countries. In the group of samples even Indonesian company shows that ownership concentration is greater than the average group is the third largest share holder ownership master and average of 58%. They argue that the lack of legal protection and institutional environment (law and enforcement) are closely linked with concentrated ownership.

Business sector

The business sector is an area where a number of companies have the same product or service. The business sector can also be interpreted as an industry that has the same characteristics and each business sector as its own characteristics and different risks.

BPS divide the business sector into three main sectors namely the primary, secondary and tertiary. The primary sector is a combination of agriculture and mining, the secondary sector is an aggregate processing business sector, construction sector, as well as electricity, gas and water. The tertiary sector is a combination of trade, hotels and restaurants; transport and communications sector; financial and business services sector; and the social services sector. In addition to the three sectors, along with advances in technology, some experts argue that there is a quaternary sector providing IT-based products or services.

The business sector could be expected to affect the access of SMEs capital. This is because in certain sectors such as the creative business sectors and services, which despite having a number of intangible assets are relatively large, but still find it difficult to raise capital

because of the amount of intangible assets that can be offered as collateral is not as much as in manufacturing companies.

Hypothesis

Based on a literature review and a framework that has been described can be formulated in the following research hypothesis:

H1: Firm size positive effect on credit access.

H2: The concentration of ownership negatively affects credit access.

H3: The business sector influence on credit access.

H4: Firm size, The concentration of ownership, The business sector influence on credit access

DATA AND METHODOLOGY

Definition and Measurement Of Operational Variables

In this research independent variables are ownership concentration, Firm size and business sector and dependent variables is credit access.

Ownership Concentration is a condition in which the majority of shares are owned by a small proportion of individuals/groups, so that the individual or the group has a number of relatively dominant share in comparison with other shareholder. The concentration of ownership proxies by the number of the largest holdings the concentration of ownership seen from the percentage ownership of the total ownership of the company (Nuryaman: 2008).

Firm size is a value that indicates the size of the company. In this study, the company uses a proxy measure the value of natural log annual income, this is so great value not too different and not too long digits. **The business sector** is an area where a number of companies have the same product or service. In this study, the business sector in the proxy by using a nominal scale, where there are three business sectors, namely sectors Manufacturing, and Retail Services. Dependent Variable **credit access** is ability the SMEs to get the credit from external. This study used secondary data obtained from the World Business Enterprise Survey (WBES). The SMEs population located in Bekasi. The sample selection is done by purposive sampling. Purposive sampling is the selection of a group of subjects based on the characteristics or certain properties that are believed to have a close relation with the characteristics or properties of the previously grouped populations.

Data Analysis Method

Analysis Descriptive Statistics

Descriptive statistical analysis was descriptive technique that provides information on the data held and does not intend to test the hypothesis. This analysis is used to present and analyze the data with the calculations in order to clarify the circumstances or characteristics of the data in question. The next testing phase in data analysis is hypothesis testing using multiple linear regression analysis. The equation used in this study, namely:

$$FA = a + \hat{\alpha}_1 SIZE + \hat{\alpha}_2 OWN + \hat{\alpha}_3 SECTOR + e$$

Finding And Discussion

Analysis Unit Description/Observation

The data in this research is secondary data obtained from the World Business Enterprise Survey (WBES). The data used is credit access as the dependent variable, the size of the company, the concentration of ownership, and the business sector as an independent variable. The data taken in 2009 with classified as SMEs according to the Law of the Republic of Indonesia Number 20 of 2008. Other criteria, the company has complete data regarding the size of the company, the concentration of ownership and the business sector, as well as the data needed to detect the credit access. In this study, there are companies that meet the criteria of 189 companies. At time of processing the data contained outliers that should eliminate the symptoms of a sample of 111 companies, it is one of the steps is to eliminate the sample. The data can be processed into 78 companies with predefined criteria.

Hypothesis Testing

Multiple Regression Analysis

This study using multiple linear regression analysis, before this analysis classical assumption was done. The equation from multiple linear regression analysis as follow:

$$FA = 1,857 + 0,085SIZE + 0,002OWN + e$$

Test F

Used F test, the results can be seen in the output of ANOVA of the results of multiple linear regression analysis. With 95% confidence level and 78 samples of company's .Results of ANOVA generate significant value of 4.857, that indicates that simultaneous or jointly independent variables significantly influence the dependent variable.

The coefficient of determination indicates show large a percentage of the independent variables. The test results showed R2 (adjustedR2) of 0.354 or 35.4%. So it can be said that 35.4% of the company's credit access is influenced by firm size, ownership concentration and

corporate business sector. While the remainder caused by other variables-variables that are not included in the regression model

t Test

Using t test the result as follow:

Partial Test results (t-test)

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.857	1.356		1.969	.018
	The size of the company	.085	.058	.170	1.758	.015
	Concentration of ownership	.002	.005	.044	.381	.175

a. Dependent Variable: Access Funding

Source: Data processed with SPSS16.

From table we can see significant t value and partial. On the Coefficients table it can be seen that the t value of variable size and ownership concentration of 1.758 and 0.381 to 0.015 and 0.175 significant. Thus H1 this study received. While that value of the variable concentration of ownership is smaller than the existing value of the t table. Significant value of the concentration of ownership has a value greater than 0.05 or 5%. Thus, it can be concluded that the variable size of the company does not have a significant influence on the variable credit access. Thus H2 this study was rejected the third hypothesis states that affect the business sector credit access. Since both variables are used to test this hypothesis is categorical variables, the test used is the chi-square test (chi-squared). Results of Cross Tab shows the distribution of the data, as shown in the table, the business sector who have the easiest access weighted capital is the retail sector with 8 of the 10 samples (80%), a company engaged in the retail sector states do not have problems in obtaining capital external. Chi-Square test results produce a symsig. Amounted to 0,047, below 0.05, then the hypothesizes accepted. Similar results were demonstrated through a symmetrical test where Cramer's v produces apprising. 0.047.

Cramer's V

Symmetric Measures

		Value	Approx. Sig.
Nominal	by Phi	.314	.047
Nominal	Cramer's V	.222	.047
N of Valid Cases		78	

Source: Data processed with SPSS16

Discussion

The size of the Company to access capital SMEs

Firm size appears to be affecting creditors in lending decisions, as companies with a larger size can provide greater assurance as well; in addition, larger companies also tend to have greater operational results. In addition, creditors will have more confidence to the larger companies, because big companies are considered to have survivability and experience in running the business. These results are consistent with previous studies such as Punyasavatsut (2011) who found that firm size has a positive impact on credit access.

Concentration of ownership of credit access of SMEs

Concentration of ownership has no effect on SMEs credit access. This is presumably due to the characteristics of SMEs in Indonesia have a family company, that Indonesia is a country with a large number of family companies. This leads to the creditor cannot choose to lend to SMEs based on the concentration of ownership, because it seems the majority of SMEs in Indonesia have these characteristics. The same thing expressed by Isachenkova and Mickiewitz (2003), that the effect of concentrated ownership and credit access can be ambiguous, because the fund providers can gain a positive impression on the supervision of a better company, but on the other hand, also saw a negative impression of the existence of agency problems. In addition, many SMEs in Indonesia allegedly operated by owner-manager so that regardless of the ratio of the concentration of ownership in SMEs, the owner of which doubles as a manager in a SMEs still have full control over the company.

The business sector of the SMEs credit access

The business sectoral so affect the company access to external capital. This is because each business sector has different characteristics to be considered for creditors to lend. One of the

most characteristic into consideration for creditors is tangibility of the company, which in general manufacturing companies have a higher level than the tangibility of services and retail companies. The results of this study are consistent with As Artola and genre (2011) found that the company engaged in the business of construction and real estate experience barriers more capital than any other company in Spain and Italy. However, this result is contrary to Pandula (2011) who found that the company's business sector showed no association with access to credit.

CONCLUSIONS AND SUGGESTIONS

Conclusion

Based on the results of the data analysis and discussion that has been done in the previous chapter, it can be concluded as follows:

First, the size of the company as measured by annual sales affect the credit access is measured based on the perception of entrepreneurs for the company access to external capital.

Second, the concentration of ownership does not affect the credit access is measured based on the perception of entrepreneurs for the company access to external capital.

Third, the business sector affect the credit access is measured based on the perception of entrepreneurs for the company access to external capital.

Fourth, The size of the Company, the concentration of ownership and the business sectors together affect the credit access is measured based on the perception of entrepreneurs for the company access to external capital.

Limitations of Research

The limitations found in this study, *First*, the definition and measurement of the dependent variables limited to the perception of entrepreneurs to access capital company regardless of whether the sample companies have over external financing needs or not. *Second*, the relationship between independent variables and the dependent in building hypothesis is based on a strong theoretical justification.

Suggestion

Based on the results, the suggestion is follows; *first*, Credit access is one of the main obstacles for SMEs which is a vital sector in the economic growth of a country. The state's role in ensuring the availability of credit access for SMEs can help the growth of SMEs, which in turn can positively affect the economic conditions of the country. *Second*, The financiers in this case banks and other credit institutions can be expected to make it easy for businesses outside the manufacturing sector, so as to encourage the growth of new creative efforts. *Third*, the following researchers who are interested in discussing credit access for

SMEs to use measurements in addition to the perception of entrepreneurs, or try to look at the issue of access capital from the supply side. In addition, the following researchers who are interested in discuss credit access SMEs can also use some of the variables that could be expected to affect SME success to capital but is not discussed in this study, such as the use of standards-compliant financial statements.

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Effect of the Suitability Rule on Investment Characteristics of Financial Consumers

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Abstract

The suitability rule requires that investment recommendation must be based on reasonable belief that the investment decision will benefit the client, ensuring the protection of financial consumers under financial laws. With the implementation of Capital Market Consolidation Act in February 2009, this study aims to understand the effect of the suitability rule on the choice of financial products and investment types of financial consumers in the Korean market. Protection of financial consumers under the Capital Market Consolidation Act was examined, and data spanning from before and after the Act (year 2008 - year 2010) were analyzed to determine the aforementioned effects. Empirical analysis showed that, under the Capital Market Consolidation Act, there was change in the financial consumers' choice of financial products: investment in checking accounts, saving accounts, and stocks decreased, while insurance and fund investments increased. Interestingly, however, the investment types (direct and indirect) of financial consumers showed no significant change. Based on these results, the study further examines the implications and future steps.

Keyword: Suitability Rule, Financial Consumer, Capital Market Consolidation Act, Financial Products, Investment Type

1. Introduction

Prior to the Global Financial Crisis of 2008, it had been generally believed that proper national prudential regulation of financial institutes would naturally guarantee the stability of the financial system and protection of financial consumers. However, since the financial crisis, it has been revealed that prudential regulation does not necessarily protect financial consumers. Therefore, upon the finding, many nations started to recognize the need to actively protect financial consumers and to implement regulations and rules. The U.S. established an organization exclusively for financial consumer protection, and U.K. and New Zealand adopted the "twin peaks" financial regulation system. Republic of Korea also augmented financial consumer protection within its newly implemented Capital Market Consolidation Act.

During her remarks at the Graduate School of Banking at Colorado in 2012, Sarah Bloom Raskin, the US Federal Reserve Governor, defined the “high road” and “low road” business model by applying Swinney’s high and low road model to the financial sector. One of the important reasons why nations are emphasizing financial consumer protection is that the choice of financial consumers greatly affects the financial market. That is, if the consumer’s choice of financial product is not (or cannot be) conducted properly, a bad financial company can provide enticing financial products and increase market share, which can then lead good financial companies to join a “race-to-the-bottom” thereby creating a situation where low road type financial companies overcome high road type financial companies. This, in turn, macroscopically leads to the “low road” business model overpowering the “high road” business model where fair competition and regulation of the market do not operate, consequentially destroying the stability of the financial system.

Suitability rule is the key to protection of financial consumers in the market. The rule states that investment recommendation must be based on reasonable belief that the investment decision will benefit the consumer. Kim et al. (2010) studied the financial investment firms’ duty to follow the suitability rule in the context of civil liability, and Mullainathan (2009) investigated the effect of financial product and service choice by financial consumers on financial companies. When financial consumers can choose financial products or services in a fair and conscious manner, this triggers sound competition within the industry thereby leading to healthy development of the financial industry. Based on these studies, the Korean government, when implementing the Capital Market Consolidation Act in February 4th, 2009, ensured and strengthened protection of financial consumers based on the suitability rule.

This study investigates the status of financial consumer protection in Korea under the Capital Market Consolidation Act and analyzes the effect of the Act on financial product or service investment choice by financial consumers based on empirical analysis using data from before and after the implementation of the Capital Market Consolidation Act. Based on the results, the effect of suitability rule on investment choice is further analyzed and discussed.

2. Capital Market Consolidation Act

The financial industry functions as arteries of the economy and also, itself, is a higher value-added industry. The structure of the Korean economy is small-scale and open and, therefore, requires the growth of capital market for competitive power in the global market. Especially with the expansion of Chinese market, there is a greater need for growth and mixing of the financial investment business in the Korean market. According to the Bank of Korea (2007), the added value of financial business was 71.7%, which was significantly higher than those of other industries such as manufacturing (22.1%) or service industry

(57.2%). Given this potential, despite the relatively late start of the financial industry compared to other advanced nations, the Korean government recognized the need to improve its financial regulations and laws, in order to ensure further growth of the industry as a solid foundation for economic development. Therefore, aiming to foster large investment banks and to vitalize the capital market, the government consolidated six preexisting laws regulating the capital market and announced the “Capital Market Consolidation Act” (consisting of 447 provisions), followed by its implementation in February 2009.

The Capital Market Consolidation Act adopted an inclusive regulatory system where financial investment products are defined as any financial product that has a potential for loss regardless of the nomenclature or type. Also, the term “financial investment product” includes any investment product that has the characteristic for investment. Most importantly, the Capital Market Consolidation Act included regulation on investor solicitation and the suitability rule in order to enforce protection of financial consumers. The suitability rule requires that investment recommendation must be based on reasonable belief that the investment decision will benefit the client. According to the rule, unfairness or incompleteness of the financial products should be informed by the seller of the product rather than the investors/consumers. To ensure consumer protection, product guidance was enforced, and “know-your-customer rule” requires to learn the investor’s characteristics, such as investment objective, experience, and assets, and to recommend financial products that are suited to the consumer when selling financial products. In addition, regulations for unsolicited calls were introduced so that consumers are protected from unwanted calls or visits for investment recommendation. In cases where one financial investment firm operates several financial businesses, the firm is required to notify the financial consumers and to ensure that financial consumer protection is not affected prior to conducting business.

3. Empirical Analysis

3.1 Data

The study aims to assess the effect of the Capital Market Consolidation Act on investment characteristics of financial consumers on financial consumers. Therefore, since the Capital Market Consolidation Act was implemented on February 4th, 2009, the study used data from year 2008 to 2010. The raw data used for empirical analysis was provided by the Korea Financial Investment Association’s annual survey on individual and institutional investors. Survey subjects are defined as individual investors over the age of 25: those with indirect investments are general samples and those with direct investments are boost samples. The survey area includes the 6 metropolitan cities in South Korea: Seoul, Incheon, Busan, Daegu, Daejeon, and Gwangju. The sample size is as following: 1504 (general sample: 1000, boost sample: 504) in year 2008; 1506 (general sample: 1006, boost sample: 500) in year 2009; and

1501 (general sample: 1001, boost sample: 500) in year 2010. Quota sampling was used as the method for sampling proportional to the population of the area, and data collection was done by intercept interview using structuralized surveys.

The term “financial consumer” is derived from investors investing on financial products and can have varying definitions. This study uses the definition from the World Bank (2012, 2013) and the Capital Market Consolidation Act: financial consumer is defined as individual investors doing transactions with financial firms and include depositors and lenders.

3.2 Results

Table 1 presents the financial products and services invested by financial consumers on a yearly basis. Since the sample size varies between years, the data is represented in percentages.

Table 1. Investment on Financial Products and Services by Financial Consumers (%)

Yr	Checking & Savings	Direct Investment (Stocks)	Indirect Investment (Funds)	Insurance/ Pension/ Others
2008	56.6	13.5	24.9	5.0
2009	52.6	14.8	24.9	7.7
2010	39.1	10.8	17.4	32.8

As shown in Table 1, in year 2008, which is prior to the Capital Market Consolidation Act, investment in checking and savings is the highest (56.6%). This distribution does not change much in year 2009, when the Act is implemented. During this year, there is a slight decrease in investment in checking and savings while direct and indirect investments remain relatively constant. Meanwhile, when the effect of the Act settles in year 2010, noticeable changes are observed compared to the prior year. Checking and savings investment greatly decreases (39.1%) as well as investment in direct investment (stocks) and indirect investment (funds). However, investment in insurance, pension, and other products shows a great increase (32.8%).

Based on this analysis, the 2010 data was analyzed in depth by classifying the data by sex and age. In addition, insurance and pension products were separated from other financial products for this analysis. The results are shown in Table 2.

Table 2. Investment on Financial Products by Sex and Age (%)

		Checking/ Savings	Indirect Investment (Funds)	Direct Investment (Stocks)	Insurance/ Pension	Others
Sex	Male	38.9	16.3	12.9	25.6	6.4
	Female	39.4	19.0	7.7	27.9	6.1
Age	34 ≥	43.1	20.3	10.3	21.8	4.5
	35~44	39.5	18.4	8.2	27.6	6.3
	45~54	37.4	15.	12.3	27.9	7.2
	55 ≤	36.9	16.4	14.7	25.9	6.2

As in Table 2, there is a difference in investment characteristics between male and female financial consumers. Male financial consumers prefer direct investment while female consumers prefer indirect investments. However, there is no difference in investment for checking and savings or insurance and pension products. When analyzed by age, the group aged 34 or less prefers checking and savings investment the most, and age 45~45 group prefers insurance and pension investment. In terms of investment type, age 55 or older group shows the highest preference for direct investment among the age groups, while age 34 or less has high preference for indirect investment products.

4. Conclusion

This study examined the effect of the suitability rule on the financial consumer's investment choices on financial products and services. Empirical analysis showed that while there was no noticeable difference between year 2009 - the year during which the Capital Market Consolidation Act containing the suitability rule was implemented - and the year prior (year 2008), significant change was revealed in 2010, one year following the implementation of the Act. In terms of services, indirect investment was preferred over direct investment. Among the product types, investment on checking and savings greatly decreased accompanied by decrease in stocks and funds investment, while long-term investment such as insurance and pension showed an increase in preference. When analyzed by consumer characteristics (age and sex), these long-term investment products did not exhibit a preferential distribution towards a particular group. Yet, interestingly, checking and savings investment was noticeable in that the younger age group showed great preference. While the younger age group preferred indirect investment, the older age group showed greater preference towards direct investment. Taken together, these results suggest that the enforcement of financial consumer protection through implementation of the Capital Market Consolidation Act

induced significant change in investment characteristics of financial consumers in the Korean market.

The development and meaningful growth of the financial sector require strengthening trust by protection of financial consumers accompanied by innovation of the financial industry. While the rapid advancement of ICT (information communication technology) is providing novel methods for delivering various financial products and services, at the same time, it is becoming increasingly harder for individual financial consumers, lacking professional financial knowledge, to make consciously sound choices and decisions. As the variety of financial products grows, the threat on financial consumers diversifies and, consequentially, can affect the investment characteristics of the financial consumers. Therefore, the financial sector should actively prepare for this change and the aftermath effects. In addition to being a component of the market and industry, financial consumers are active players and effectors of the industry. Therefore, further investigation should ensure that firmer and more meaningful foundation is laid for this field with consideration of both practical and academic aspects and insights.

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Reverse Stress Tests by Extreme Value Theorem for Clearinghouse

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Abstract

Both EMIR Article 60 and PFMI Principle 4 require a clearinghouse to conduct reverse stress tests to identify under which circumstances the combination of clearing margin, clearing fund and other financial resources may provide insufficient coverage of credit exposure and for which its liquid financial resources may not be sufficient. This paper proposes an alternative quantitative method based on extreme value theorem with “peak-over-the-threshold” method to identify a set of possible threshold given a range of dynamic available funds. Extreme value theorem is an appropriate choice because it can provide better accurate tail estimation where the default loss would hit beyond available fund. The threshold derived from extreme value theorem can uncover hidden vulnerabilities for the clearinghouse to design effective risk monitoring and risk management system.

Key words: Reverse Stress Tests, Clearing Margin, Clearing Fund, Extreme Value theorem,
JEL Codes: G23, G28, and C61

1. Introduction

Stress test is a simulation technique applied on asset and liability to determine the potential impact on an enterprise of a specific event and/or movement in a set of financial variables. Lijia Guo (2008) concluded that effective stress testing maximizes the risk adjusted enterprise profit by controlling major risks (financial, strategic, operational and hazard) upon identifying risk metrics and modeling the correlations. Therefore, stress test has been widely adopted as key element in enterprise risk management process to analyze potential impact of certain adverse circumstances on their business and is suggested to be embedded in an enterprise’s governance structure under the supervision of the board and senior management. Since financial risks are often measured based on historical data under normal market assumptions, the regulatory requires supplementary stress tests on certain financial institutions to ensure adequate capital allocation levels to cover potential losses incurred during extreme, but plausible, events. Two main approaches used for stress tests are sensitivity and scenario analyses. Sensitivity analysis evaluates the impact of large movements in financial variables on portfolio values without identifying causes of such

movements. However, the sensitivity analysis lacks historical and economic content, which can limit its usefulness for longer term risk management decisions.

Regardless of strict regulatory on risk management and stress test requirement for financial institutions, the performance of stress test practices during the crisis in 2008 have been found to be weak in four main areas: (i) use of stress test and integration in risk governance; (ii) stress test methodologies; (iii) scenario selection; and (iv) stress test of specific risks and products. Before the crisis, stress test practices were not sufficient to identify and aggregate risks because most financial institutions did not perform a comprehensive firm-wide stress test across risks of their various businesses. Moreover, stress tests were not adequate to cope with rapidly changing circumstances, especially when the crisis was far more severe than indicated by financial institutions' stress testing results. Consequently, in 2009, the Basel Committee published recommendations for banks and supervisors entitled "Principles for sound stress testing practices and supervision" in order to set out a comprehensive set of principles for the sound governance, design and implementation of stress testing programs at banks as well as the role and responsibilities of supervisors in evaluating stress test practices. The recommendations for improving stress test programs include; consistent scenario revision, risk identification of new products, consideration of interaction between credit, market, and liquidity risk. More importantly, senior management should be responsible for reviewing and identifying potential stress scenarios and incorporate stress test results for risk management plan from setting risk appetite of a bank to setting exposure limits.

To supplement stress test, reverse stress test to determine hidden risks and interactions among risks that could challenge the viability of the bank was recommended by the Counterparty Risk Management Policy Group in its August 2008 report titled Containing Systemic Risk: The Road to Reform-The Report of the CRMPG III. The bank is currently required to carry out reverse stress tests under Basel Committee on Banking Supervision (2009), Committee of European Banking Supervisors (2009) or Financial Services Authority (2008, 2009)).

This paper proposes a reverse stress test methodology based on extreme value theorem. The paper is structured as follow: section 2 describes the importance of and the difference between stress tests and reverse stress tests. Section 3 provides the background knowledge of risk management system at the clearinghouse. Section 4 highlights the regulatory change to include reverse stress test practice among financial market infrastructures including a clearinghouse that acts as a central counterparty. Section 5 explains an alternative reverse stress test approach based on extreme value theorem. Finally, section 6 discusses the conclusions.

2. Stress Tests and Reverse Stress Tests

While general stress tests are the tests for potential loss arising from chosen scenarios, reverse stress tests are stress tests to identify potential areas of business vulnerabilities from scenarios and circumstances that would cause the business to be unviable, at which point certain risks could cause the market to lose confidence in the enterprise. For example, a bank is viable when it breaches regulatory capital ratios, illiquidity or insolvency, or large mortgage lenders may identify a significant drop in house prices that would impact the viability of their current business model.

Reverse stress tests are increasingly becoming important risk management tools for the enterprise to explore more fully the areas of vulnerabilities and tail risks. The involvement of senior management is crucially important for the effective reverse stress tests on all material risk areas across the enterprise. Since reverse stress tests require an enterprise to consider scenarios beyond normal market condition and to the situation where losses are systematic, reverse stress tests create both quantitative and qualitative implications that senior management can use to assess an enterprise's vulnerabilities.

For example, an enterprise with a large exposure to complex derivatives contracts could have asked what kind of scenario would have led to systematic losses to the level where an enterprise would be unviable. Then, an enterprise could have analyzed its hedging strategy and assessed whether this strategy would be robust in the stressed market environment. This type of reverse stress test can uncover hidden vulnerabilities and highlight inconsistencies in hedging strategies.

Before the financial crisis, most senior management did not pay much attention to the aforementioned reverse stress test analysis simply because the extreme event or tail risk have a very low probability of occurring. After the crisis, banking regulation now indicates the need for reverse stress test of the tail risk and a comprehensive risk management strategy for such potential extreme losses. Reverse stress test program is highly recommended for new products and new markets which have not experienced extreme events. It is important to note that reverse stress tests are not a substitute, but supplement, for stress tests.

There are two alternative approaches to run reverse stress tests—quantitative or qualitative approaches. The appropriate approach will depend on the nature, size, and complexity of the relevant enterprise and the risks it bears. Qualitative approach may be appropriate for smaller simpler enterprises because it relies on scenario analysis and involves senior management for their expert opinion while quantitative approach would be more appropriate for larger and more complex enterprise because it would require a more sophisticated approach for reverse stress test.

3. Risk Management at Clearinghouse

To better design reverse stress test for the clearinghouse, the basic understanding of minimum risk management system at clearinghouse must be taken into account. A clearinghouse plays a very important role in managing default risk of derivatives trading with the main responsibilities of settling trading accounts, clearing trades, collecting and maintaining margin monies, regulating delivery and reporting trading data. A clearing house acts as a central counterparty to securities and derivatives trading by acting as a buyer to every clearinghouse member seller and a seller to every clearinghouse member buyer. Therefore, the clearing house's critical task is to assess and monitor any possible counterparty risks and design an effective credit risk containment system.

For derivatives trading, margin is used as one of many risk management tools to assess overall portfolio risk to protect traders and the market as a whole. An initial margin is the margin required when the derivatives positions are initiated, while a maintenance margin is the level at which market participants must maintain their margin over time. Margin is calculated on instrument level usually without considering correlations between different instruments to reduce margin requirement. Even though a potential default occurs when there is a large futures price change, there is a maintenance margin which acts as an early warning signal before the investors' margin account balance is wiped out. The investors are required to deposit additional funds when their margin account balance falls below a maintenance margin level.

For both cash and derivatives markets, the clearinghouse also puts in place an early warning system (EWS) and a financial surveillance system (FSS). When a brokerage firm first applies for a clearinghouse membership, the clearinghouse would extensively evaluate each application based on its screening set of requirement. After becoming a member of a clearinghouse, the member's financial status would then be monitored under the FSS. The purpose of FSS is to provide the clearinghouse with a leading indicator to determine its member's financial evolution through time so that a clearinghouse could handle potential adverse impacts on credit risk from such changes. EWS is another system that a clearinghouse uses to monitor its members' portfolio risk on a daily basis. The clearinghouse member may be required to put up additional fund with the clearinghouse if its portfolio risk breaches a specified acceptable threshold. In other words, the FSS is similar vital sign checkup that can alert attention when there is a significant change in the pattern; while the EWS is considered a behavioral monitor following through each member risk taking activities through its portfolio everyday.

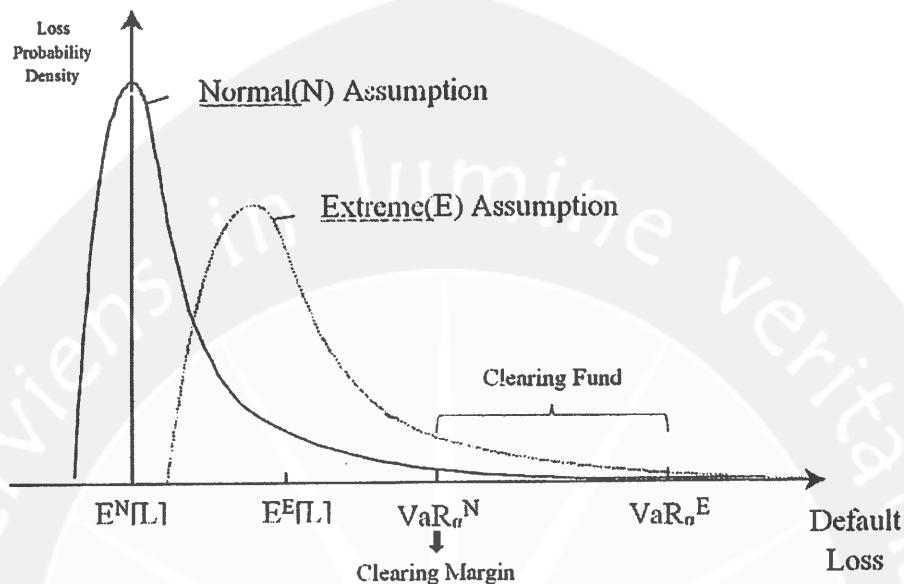
Moreover, clearinghouse members are also required to make a clearing contribution to the clearing funds. This clearing fund is designed to protect the market participants including the clearing house in the event of abnormal market condition or extreme price change. As such, the clearing margin amount provides a financial protection under the normal market

condition and the clearing fund amount is used when there is an extreme event. Saardchom (2015) found that setting clearing margin level with value-at-risk method would be more appropriate than with extreme value theory because value-at-risk method can provide a clearing margin levels for a given probability of margin violation under normal market condition. However, to maintain low probability of margin violation, such margin levels must often be adjusted to reflect the latest price volatilities, which is a dynamic margin setting based on value-at-risk with simulated exponentially weighted moving average (EWMA) volatilities that will result in a margin level which is high during high price volatility and vice versa. A clearinghouse would use back testing and sensitivity testing to validate its margin model.

The clearing fund is another important element of clearinghouse's risk management system. Every clearing member is required to contribute to the clearing fund, which will be used in case of member default. According to EMIR Article 42, the target size of clearing fund should at least enable the CCP to withstand, under extreme but plausible market conditions, the default of the clearing member to which it has the largest exposure or of the second and third largest clearing members, if the sum of their exposures is larger.

Therefore, while day to day risks are aimed to be covered by clearing margins, additional losses due to extreme but plausible market conditions should be covered by the clearing fund, shown in Figure 1. Different clearinghouse may apply different non-normal assumption. For example, Central Counterparty Australia (CCP.A) calculates its default (clearing) fund based on the assumption that the 3 largest clearing members simultaneously default. The model for computing the clearing fund amount must be validated by both stress testing and reverse stress testing.

Figure 1 Clearing Margin and Clearing Fund



4. Regulatory Reverse Stress Tests for Clearinghouse

A clearinghouse acting as a central counterparty (CCP) interposes itself between counterparties to contracts traded in one or more financial markets, becoming the buyer to every seller and the seller to every buyer and thereby ensuring the performance of open contracts. Therefore, CCPs have the potential to reduce significantly risks to participants through the multilateral netting of trades and by imposing more-effective risk controls on all participants. For example, CCPs typically require their members to provide collateral, in the form of initial margin and other financial resources, to cover current and potential future exposures. CCPs may also mutualize systematic risks through devices such as clearing funds. Given their potential to reduce risks to market participants, CCPs also can reduce systemic risk in the markets they serve. The effectiveness of a CCP's risk controls and the adequacy of its financial resources are therefore critical to achieving these risk-reduction objectives. As a result, a clearinghouse that facilitates the clearing, settlement, and recording of monetary and other financial transactions can strengthen the markets they serve and play a critical role in fostering financial stability. However, if not properly managed, it can pose significant risks to the financial system.

To strengthen core financial infrastructures and markets, European Market Infrastructure

Regulation (EMIR)¹ Article 60 states that a clearinghouse acting as a central counterparty (CCP) shall conduct reverse stress tests which are designed to identify under which circumstances the combination of margin, clearing fund and other financial resources may provide insufficient coverage of credit exposure and for which its liquid financial resources may not be sufficient.

Reverse stress tests are recommended to be performed on a quarterly basis to enable the clearinghouse to determine market conditions, in which a predefined threshold (in EUR) is reached. The threshold provides the breakeven point between available financial resources and necessary resources to cover the simultaneous default of a predefined number of clearing house members.

Principle 4 of Principles for Financial Market Infrastructure (PFMI)² states that a CCP should also conduct reverse stress tests, as appropriate, to test how severe stress conditions would be covered by its total financial resources in addition to determining the amount and regularly test the sufficiency of its total financial resources through stress testing. Because initial margin is a key component of a CCP's total financial resources, a CCP should also test the adequacy of its initial margin requirements and model through back-testing and sensitivity analysis, respectively according to Principle 6. Table 1 shows applicability of 24 principles to each specific type of FMIs. There are only two principles—11 and 24—that are not applied to CCPs.

¹ European Market Infrastructure Regulation (EMIR) is a European Union regulation which came into force on 16 August 2012 and aimed at improving the transparency of over-the-counter (OTC) derivatives markets and to reduce the risks associated with those markets throughout the EU states. Four key EMIR provisions include reporting obligation for derivatives contracts, requirements for trade repositories (TRs), clearing obligation for OTC derivatives and risk mitigation techniques for non-cleared OTC derivatives including non-financial counterparties (NFC) obligations, and requirements for clearing houses/central counterparties (CCPs).

² In April 2012, the Committee on Payments and Settlement Systems (CPSS) and the Technical Committee of the International Organization of Securities Commissions (IOSCO) published the standards report Principles for financial market infrastructures (PFMIs). The new standards replace the three existing sets of international standards set out in the Core principles for systemically important payment systems (CPSS, 2001); the Recommendations for securities settlement systems (CPSS-IOSCO, 2001); and the Recommendations for central counterparties (CPSS-IOSCO, 2004). CPSS and IOSCO have strengthened and harmonized these three sets of standards by raising minimum requirements, providing more detailed guidance and broadening the scope of the standards to cover new risk-management areas and new types of FMIs.

Table 1¹
General applicability of principles to specific types of FMIs

Principle	PSs	CSDs	SSSs	CCPs	TRs
1. Legal basis	•	•	•	•	•
2. Governance	•	•	•	•	•
3. Framework for the comprehensive management of risks	•	•	•	•	•
4. Credit risk	•		•	•	
5. Collateral	•		•	•	
6. Margin				•	
7. Liquidity risk	•		•	•	
8. Settlement finality	•		•	•	
9. Money settlements	•		•	•	
10. Physical deliveries		•	•	•	
11. Central securities depositories		•			
12. Exchange-of-value settlement systems	•		•	•	
13. Participant-default rules and procedures	•	•	•	•	
14. Segregation and portability				•	
15. General business risk	•	•	•	•	•
16. Custody and investment risks	•	•	•	•	
17. Operational risk	•	•	•	•	•
18. Access and participation requirements	•	•	•	•	•
19. Tiered participation arrangements	•	•	•	•	•
20. FMI links		•	•	•	•
21. Efficiency and effectiveness	•	•	•	•	•
22. Communication procedures and standards	•	•	•	•	•
23. Disclosure of rules, key procedures, and market data	•	•	•	•	•
24. Disclosure of market data by trade repositories					•

¹ This table depicts the applicability of the principles to each type of FMI as defined in paragraphs 1.10-1.14. If an FMI performs the functions of more than one type of FMI, all of the principles that address the actual functions performed by the particular FMI will apply in practice.

Source: CPSS-IOSCO – Principles for financial market infrastructures – April 2012

Reverse stress tests require the clearinghouse to consider what loss events or risk factors that could lead the clearinghouse to such an outcome in order for the clearinghouse to structure an appropriate mitigating plan. Therefore, the clearinghouse may identify large counterparty risks that threaten the viability of its financial resource by incorporating some extreme scenarios, which would cause the clearinghouse to be insolvent, into the overall stress testing program.

Unfortunately, despite the intensity with which the necessity of reverse stress tests is discussed by bank supervisors, there is not much scientific literature on how to carry out a quantitative reverse stress test in practice. In general, only case studies for simply structured portfolios with one or two risk factors can be found. For example,

Liermann and Klauck (2009) present examples of a reverse stress test for a portfolio of default risk-free (foreign currency) bonds. The reverse stress test methodology for clearinghouse could rely on a reprocessing of the stress tests using a "trial and error" approach until the objective is met. The relevant risk factors; cash market price and derivatives settlement price, will be shocked by applying a factor to it.

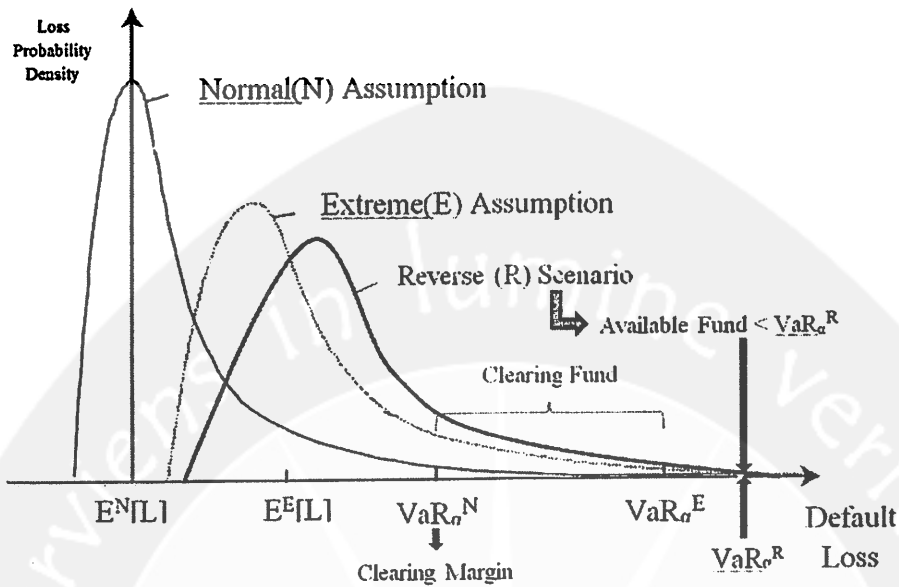
5. Extreme Value Theorem

The total available resources to cover defaults consist of margin requirements, clearing fund, and a clearinghouse's own resources. Margin model alone can be validated by back testing and sensitivity testing while the clearing fund model must be validated by stress testing and reverse stress testing.

According to EMIR Article 60, a CCP shall conduct reverse stress tests which are designed to identify under which circumstances the combination of margin, clearing fund and other financial resources may provide insufficient coverage of credit exposure and for which its liquid financial resources may not be sufficient. Figure 2 represent how reverse stress testing could be conducted under the framework of EMIR Article 60. The term available fund in figure 1 is the summation of clearing margin, clearing fund, and clearing house's own resources.

The reverse scenarios are derived at the level where this available fund is reached. Some clearing houses use trial-and-error process to look for the reverse scenarios that will make the actual default loss hit the available fund amount. This paper proposes a more systemic quantitative approach based on extreme value theorem. Since the actual default loss that would hover near the level of available fund is rather high or very far tail on the distribution, the accuracy of the tail distribution is very crucial for deriving reliable reverse scenarios. Extreme value theorem is one of the reliable techniques to achieve such accuracy. By setting available fund equal to value at risk (VaR) measure with extreme value theory, reverse scenarios can then be derived.

Figure 2 Reverse Stress Tests



There are two main approaches for VaR calculation—parametric and non-parametric models. A non-parametric model makes no assumption on the distribution of securities' return, but derives the distribution based on historical return data. The VaR result of a non-parametric model may fail to capture the extreme loss that is not included in the chosen data sample. Moreover, a VaR measure becomes more uncertain at higher confidence level. In contrast, a parametric model assumes that the securities' return follow a parametric family such as a normal distribution. The VaR measure under a parametric approach is calculated by a following equation.

$$VaR_{\alpha} = \mu \pm \sigma \cdot Z_{\alpha} \quad (1)$$

Where $1-\alpha$ is a confidence level, μ is expected securities' return, σ is volatility of securities return, and $z(\alpha)$ is α quantile of standard normal cumulative probability.

Most clearinghouses rely on a parametric approach for clearing margin and clearing fund valuation based on VaR by assuming that securities return has a normal distribution. The disadvantage of this approach is that the VaR result will no longer be accurate when securities' return does not have a normal distribution. Moreover, a VaR measure cannot capture extreme loss events, which is very important for clearing and settlement system because counterparty risk is likely to be high when the security prices change significantly or when the securities' returns are from the fat tail distribution. In such condition, reverse scenarios derived from VaR under normality assumption can be a critical source of error.

Since we are interested in the distribution of default loss, which is associated with securities' return in the left tail of the distribution, a "peak-over-threshold" method can be adopted to derive the probability distribution of the left tail. For a given threshold u , the probability that the securities' return will exceed the level u is defined as:

$$F_u(y) = \Pr(r - u \leq y \mid r > u) \quad \text{for } y \geq 0, r = y + u \quad (2)$$

$$F_u(y) = \frac{F(y+u) - F(u)}{1 - F(u)} \quad (3)$$

If the threshold u is large enough, the distribution of the return exceeding u can be approximated by Generalized Pareto Distribution (GPD) with the following relationship.

$$F_u(y) = G_{\xi, \sigma}(y) \quad (4)$$

The distribution of r can then be simplified as:

$$F(r) = (1 - F(u))G_{\xi, \sigma}(y) + F(u) \quad (5)$$

Therefore, $F(u)$ can be estimated by $(N - n_u)/N$ where N is the number of observations with negative return and n_u is the number of observations with return exceeding a threshold u . The cumulative density function of Generalized Pareto distribution, $G_{\xi, \sigma}(y)$ is defined as:

$$G_{\xi, \sigma}(y) = \begin{cases} 1 - \left(1 + \frac{\xi y}{\sigma}\right)^{-1/\xi} & \text{where } \xi \neq 0 \\ 1 - e^{-(y/\sigma)} & \text{where } \xi = 0 \end{cases} \quad (6)$$

Where ξ is a shape parameter and σ is a scale parameter. Then, the distribution of r can be revised as follow.

$$F(r) = \left(1 - \left(\frac{N - n_u}{N}\right)\right) \left(1 - \left(1 + \frac{\xi y}{\sigma}\right)^{-\frac{1}{\xi}}\right) + \frac{N - n_u}{N}$$

$$F(r) = 1 - \frac{n_u}{N} \left(1 + \frac{\xi y}{\sigma}\right)^{-\frac{1}{\xi}} \quad (7)$$

Therefore, the VaR_α measure with the distribution based on extreme value theory method can be written as:

$$\text{VaR}_\alpha = u + \frac{\sigma}{\xi} \left[\left(\frac{N}{n_u} \alpha \right)^{-\xi} - 1 \right] \quad (8)$$

ξ and σ can be estimated by a maximum likelihood method. Note that the probability density function of Generalized Pareto Distribution is represented by the following equation.

$$f(y) = \frac{1}{\sigma} \left(1 - \frac{\xi y}{\sigma}\right)^{\frac{1}{\xi} - 1} \quad \text{where } \xi \neq 0 \quad (9)$$

As a result, the likelihood function can be shown as:

$$L(\xi, \sigma | y) = \prod_{i=1}^n \frac{1}{\sigma} \left(1 - \frac{\xi y_i}{\sigma}\right)^{\frac{1}{\xi} - 1} \quad (10)$$

Thus, the log likelihood is

$$\ln(L(\xi, \sigma | y)) = - \frac{n \xi \ln(\sigma) + (\xi - 1) \sum_{i=1}^n \ln\left(1 - \frac{\xi y_i}{\sigma}\right)}{\xi} \quad (11)$$

We can then solve the following equations for maximum likelihood estimators for ξ and σ .

$$\frac{\partial \ln L(\xi, \sigma | y)}{\partial \xi} = 0 \quad (12)$$

$$\frac{\partial \ln L(\xi, \alpha | y)}{\partial \sigma} = 0 \quad (13)$$

VaR_α of securities' return, in equation 8, that is associated with VaR_α^R of default loss at the level where available fund is reached can be identified based on different assumption used at each clearinghouse. Since both clearing margin and clearing fund are now dynamically revised at almost every clearinghouses, available fund should not be treated as one static amount, but rather a range of possible value of available fund. Applying the range of potential available funds to associated VaR_α in equation (8), together with equation (12) and (13), the set of threshold u for reverse scenario can then be derived to generate vulnerability scenario for the clearinghouse. For example, how many defaults need to happen or how extreme market stress should be to have critical impact on the clearinghouse can be identified. Knowing such area of vulnerability, the clearinghouse can develop a solid risk management plan.

6. Conclusion

The recent economic crisis has proved that stress tests are insufficient to provide reliable tests for financial sustainability of financial institutions. Reverse stress tests have become crucial supplemental requirement applied to both bank and a central counterparty like the clearinghouse.

The regulation on reverse stress test tends to only provide the broad concept of reverse stress tests without the detail of how such reverse stress tests should be conducted. Instead of trial-error method adopted in several clearinghouse, this paper proposes an alternative quantitative approach based on extreme value theorem to perform reverse stress tests for the clearinghouse.

In accordance with EMIR Article 60, the range of dynamic available fund for default loss event; a combination of clearing margin, clearing fund, and other financial resource, can be used to find an associated range of VaR_α of securities' return given extreme assumption used for computing clearing fund at the clearing house. With this associated VaR_α measure, the distribution based on extreme value theory can be applied to determine the

threshold u , which can then be used to develop possible reverse scenarios.

Given possible reverse scenario as to how many defaults need to happen or how extreme market stress should be to have critical impact on the clearinghouse's survivability, the clearinghouse can design appropriate risk monitoring and risk management system.

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The Effects of Agency Costs and Insiders' Shareholdings on Financing Choices

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Abstract

This paper investigates the effects of debt agency cost and equity agency cost of current and prior periods on the financing choices of long-term debts, seasoned equity offering, and private equity financings. It also examines the effects of the shareholdings of insiders on the association between both debt and equity agency costs and the choice of financing methods. The findings show that both prior and current debt agency costs are positively related to seasoned equity offerings of current period, and both prior and current debt agency costs are positively related to private equity financing of current period regardless of whether the models consider the factor of insiders' shareholdings. As for equity agency cost, the document indicate that both current and prior equity agency costs are negatively related to current seasoned equity offerings, however, only prior equity agency costs are negatively related to current seasoned equity offerings under considering shareholdings of insiders. Moreover, the shareholdings of insiders would affect the positive association between the corporate debt agency cost and seasoned equity offerings and the positive association between the corporate equity agency cost and debt financing.

Keywords: Debt agency cost, Equity agency cost, Seasoned equity offering, Long-term debts, Private equity, Insider's shareholdings

1.Introduction

A firm should concern factors when making financing decisions, but the choice of financing methods depends on whether it can maximize the corporate benefits. The act of financing not only enables a firm to obtain sufficient capital, but also maximizes corporate benefits, and facilitates the implementation of follow-up policies. Myers and Majluf (1984) suggested that most firms issue bonds to gain capital, so as to receive more investment opportunities with

greater value. However, compared with the investors, the managers of firms have clearer knowledge over the internal operation of firms. In case of information asymmetry, a firm could gain more capital through different financing channels.¹

According to Jensen and Meekling (1976), the agency cost is attributable to the acts of managers motivated by self-interest in order to pursue personal gains in case of the separation of ownership and operation rights. This is detrimental to the overall corporate benefits, increases the corporate debt and equity agency costs, causes poor corporate operation performance, and results in loss of shareholder value under the separation of ownership and operation rights (Fama and Jensen, 1983b). Both the academia and practitioner concern about how to improve corporate governance. Divergence exists in Taiwan regarding the study of governance structure. By reference to the corporate governance mechanism, this paper discusses the correlation between the agency cost and financing decisions as well as the impact of number of shares held by insiders on the correlation between agency cost and financing decisions.

When a firm is in need of capital, capital can be obtained through issuance of new shares or debt. In case of issuance of new shares, due to increase of external shareholders, surplus is incurred, the book value is diluted, and the agency issues are incurred. Nevertheless, receiving capital through debt elevates the credit risks of firms, and results in increased agency cost to shareholders and creditors. The employment of financial leverage could decide what financing method is to use, which further affects the corporate value. The corporate debt methods are merely debt from financial institutions or issuance of corporate bonds. The reasons for debt from banks and issuance of corporate bonds lie in the characters of industries and tendency to gain trust of banks or bondholders, so financing from banks or bondholders could be gained smoothly. On the other hand, either the financing method of debt or issuance of new shares incurs cost for financing. Since the rate of returns required by debt is lower than that of issuing new shares, the majority of firms believe that debt financing could reduce the total capital cost, which further elevates the corporate value of firms. Comparatively speaking, the debt agency cost is lower.

Another source of capital is private equity financing. Lee and Kocher (2001) pointed out that firms that engage in private equity financing are those of small scale, high growth, financial difficulty and lacking external capital. Moreover, the private equity acts are not easily affected by market mispricing. Due to high interest rates of debt or other factors that incapacitate firms to borrow money from financial institutions, firms would turn to the

¹ Myers and Majluf (1984) proposed that as the debt risks are lower than increment of cash, under the substantial investment theories, the firms intend to obtain investment opportunities with growth capacity and engage in financing. Therefore, the external financing of firms tend to be financing by debt, while firms need capital injection due to investment opportunities, if they have run out of debt capacity, firms are not likely to issue securities, as the risks are high and such investment opportunities might be abandoned.

private equity financing. Cronqvist and Nilsson (2005) argued that firms whose information is not transparent might select private equity due to cost factors.

The stakeholders are based on a contractual relation. Besides the shareholders and the creditors, there are still issues regarding large and small shareholders, while shareholders and creditors or managers would incur the agency issues for the pursuit of personal gains. From the debt relation view, when a firm has a high leverage, it is more likely to have a conflict for corporate dividend between the creditors and the shareholders (Ahmed et al. 2002). As the investment risks of creditors increase with the long-term debt ratio, the creditors may request for higher returns for the sake of personal interests, which in turn increases the debt cost of firms. From the viewpoints of equity cost, when the equity held by the shareholders of firms is enough to effectively control the decision-making rights of firms, the controlling shareholders may be motivated to continue maintenance of the equity. Consequently, when the shareholdings of controlling shareholders are high, the returns of stock are also high, which further increases the equity cost of firms.

If the conflicts of interests for stakeholders among agency relations are high, the required returns by creditors and shareholders are also higher, which burdens the agents with relatively higher capital cost and increasingly higher derived agency cost. The agency issues are reflected in the equity agency cost and debt agency cost. This paper attempts to understand the agency cost for different financing methods, and the roles played by debt agency cost and equity agency cost in financing decision-making. The proportion of shares held by the insiders imposes impact on the agency cost. Although many studies have explored the corporate governance, agency cost and corporate value, few have focused on how the shareholdings of insiders impact the relationship between agency cost and financing decision-making. This is the motivation of this study.

As there are diversified financial tools, the financing decision-making methods in the financial polices pay more attention to the selection than in the past. The public offering firms issue securities in the market, the equity disperse degree increases along with the issuance extent of equity. Due to market transaction, the stakeholders change frequently. For the purpose of smooth operation, professional managers are recruited to formulate and implement decision-making on behalf of firms. For this reason, while firms intend to engage in financing acts, the decision-making ability and shareholding conditions of managers should be considered, as managers are an important factor that affects whether firms implement various financing decision-making. On the other hand, with regard to capital structure, while in need of capital, firms could gain capital through issuance of new shares or debt. Gaining capital through debt would elevate the credit risks of firms, which results in increase in agency cost to shareholders and creditors. Hence, the balance point must be obtained among various costs, which decides the corporate capital structure, namely, the trade-off theory proposed by Myers (1984).

According to previous empirical results (Hessel and Norman, 1992; Wahal and McConnell, 2000), shareholding by major shareholders and debt policies could effectively reduce agency problems. These tools are interactional with decision-making regarding investment, debt, dividend, and corporate risks and value. When the shares held by the insiders increase, the managers may dedicate to the R&D, advertising or HR cost after considering the long-term competitiveness and their wealth, so as to increase the corporate value. The change in shareholdings of managers also affects the correlation of agency cost and corporate financing decision-making.

This paper first discusses whether firms tend to choose seasoned equity offering for financing while the debt agency costs of prior and current periods are high. Second, it discusses whether firms tend to choose private equity method for financing, while the debt agency cost of prior and current periods are high. Third, it discusses the whether the shareholdings by the insiders would affect the relationship between the debt agency cost and the seasoned equity offerings financing, and whether the shareholdings of insiders would affect the relationship between the equity agency cost and the debt financing of firms. Lastly, it discusses whether the shareholdings by the insiders would affect the relationship between the agency cost and private equity financing of firms.

The contributions of this study are as follows. Most past studies on financing acts focus on both seasoned equity offerings and debt financings, rarely relating to private equity financing; however, either the market timing theory or precautionary motive theory is related to the private equity. Thus, this paper integrates the agency cost and financing decision-making into the financing method of private equity. Second, according to previous literatures, firms with relatively higher investment opportunities have higher debt agency cost; hence, the debt agency cost is measured by the market to book ratio of equity. According to Singh and Davidson III (2003), and Tsai, Shao and Yang (2008), the equity agency cost is measured by selling and administrative expenses ratio and the total asset turnover. The second contribution of this study is to simultaneously consider the debt and equity agency costs.

The remainder of this paper is organized as follows: Section 2 presents the literature review. Section 3 explains the empirical methodology, including research design, research periods, sampling criteria and variable definitions, and proposing the empirical models. Section 4 summarizes the empirical result, and the conclusions are given in Section 5.

2.Literature Review and Hypothesis Development

According to McKnight and Weir (2009), as for the measurement method of agency cost, the debt agency cost is measured by the market to book ratio of equity. The definition of equity agency cost is limited to the improper control and management (including prerogative consumption) over discretionary expenses and inefficient operation by managers. According

to Ang, Cole, and Lin (2000), the selling and administrative expenses ratio and asset turnover are employed to measure the equity agency cost.

John and Senbet (1998) discuss how firms resolve agency problems via control mechanism in terms of capital structure. Besides the equity agency problems, debt agency problems and social agency problems impose impact on the operation performance. Thus, when the impact on corporate performance by agency problem is studied, debt agency problem is an important factor to be considered for agency cost. Berger, Ofek, and Yermack (1997), and John and Senbet (1998) point out that since shareholders assume limited responsibilities, the creditors only receive returns of fixed benefits. As a result of the debt agency problem, creditors transfer the debt agency cost to the shareholders through increase of debt limits, and the managers may be forced to forsake the profitable investment plans due to increase of debt cost, which results in economic inefficiency.

Frank and Goyal (2003) indicate that when firms intend to invest, if the needed capital cannot be supplied internally, firms would engage in external financing acts, which are categorized into issuance of stocks and debts. Marchica and Mura (2010) argue that if the firms have extra debt capacity, it is easier for them to obtain external financing, and the future investment expenditure is significant. In other words, proper debt enables firms to keep sound financial elasticity and the investment returns of firms in the future are greater.

Malmendier, Tate, and Yan (2011) suggest that internal capital is preferred to be used to support the capital demand of the firms as managers may overestimate the future cash flow of firms, and believe that the financing cost of external financing particularly equity financing is high, thus overestimating their own capabilities. Moreover, when firms need external financing, they still prefer debt to issuance of equity. In case of debt, managers tend to be conservative over debt financing. Malmendier, Tate, and Yan (2011) find that managers mostly employ risk-free debt or long-term debt for financing. As a result, the debt in the decision-making of the financing referred to in this study means long-term debt.

Equity agency cost affects firms whether to employ the financing method of seasoned equity offerings, and debt agency cost affects whether to finance through debt from banks or issuance of bonds. Therefore, when discussing the agency cost, both equity agency cost and the debt agency cost should be analyzed, so as to have an overall view over the agency problems and issues. For this reason, when discussing the impact of agency cost on debt or equity financing decision-making, this study analyzes the equity agency cost and the debt agency cost simultaneously.

From the views of insufficient investment, Myers (1977) argues that in order to avoid sole enjoyment of investment's returns by creditors, the shareholders of debt firms tend to select sub-optimal investment plans that results in insufficient issues or under-investment, while the creditors would require relatively lower bond price when undertaking bonds in order to protect their own interest, which makes firms confront the debt agency cost of underestimated

bond price. Since firms bear these debt agency cost, the capital cost of debt increases and decreases the willingness of debt, for this reason, we expected that there is a negatively association between debt agency cost and debt ratio.

Myers (1984) and Myers and Majluf (1984) propose that the information asymmetry between the managers and the investors may impact the financing acts of firms. The investors render lower share price in case of equity financing by firms, or request higher return, which leads to adverse selection and causes obstruction in financing. Jensen (1986) proposes that the debt of firms could refrain from the over-investment acts of managers, and in case of external financing, the creditors are also liable for supervision on firms, which increases the corporate value.

Cronqvist and Nilsson (2005) indicate that firms whose information is not transparent tend to finance through private equity due to consideration in cost factors and rights of control. When the information asymmetry between firms and investors is high, firms chooses the private equity for financing. Lee and Kocher (2001) argue that the firms engaging in private equity are mostly small in scale, high in growth, difficult in finance, and lacking external capital. Moreover, the financing motivation and features of both private equity firms and public offering firms are not easily vulnerable to the mispricing of market. It can be seen that financing motivation and features of private equity firms and public offering firms have significant disparity. Financing by private equity is the act of private equity firms who have strong demand over external capital. This study deduces that the higher the agency cost of corporate equity and debt is, the more likely the firms tend to select private equity for financing.

Based on the above, this study proposes the following hypotheses:

H1a: When the debt agency cost is high, the firms are more likely to select financing by seasoned equity offerings.

H1b: When the equity agency cost is high, the firms are more likely to select debt financing.

H1c: When the agency cost is high, the firms are more likely to select private equity for financing.

Jensen and Mecking (1976) point out that when the shareholdings of managers increase, the interests of managers and shareholders are more likely to be consistent, the motivation for prerogative consumption is slim. Thus, when the shareholdings of managers are high, the corporate performance is better. Rosenstein and Wyatt (1997) suggest that when the insiders have professional knowledge of corporate operation, they are more likely to formulate decisions than the externals in a more effective manner. However, the increase of the shareholding of insiders is more likely to hurt the interests of outside shareholders.

Ang, Cole, and Lin (2000) indicate that after the listed firms raise funds in the market, the ownership is decentralized, the shareholdings of managers reduces as well, less capital contribution or low shareholding level may become the issue. The interests of managers that control the rights of management of firms apparently deviate from the corporate interests, or even infringe the interests of small and medium shareholders. Ang, Cole, and Lin (2000) found that when firms are managed by external parties, the agency cost is relatively high. Second, the agency cost of firms and the shareholdings of managers are negatively correlated. When the shares held by the non-managers increase, the agency cost increases as well. Jensen and Meckling (1976) argue that shareholdings of managers and the agency cost are negatively correlated, namely, when the shareholdings of managers is low, their debt agency cost and equity agency cost are higher. This paper discusses whether the shareholding of insiders would affect the correlation between the agency cost and the corporate financing selection.

This study predicts that if the shareholding ratio by insiders is high, even though the equity agency cost is high due to pursuit of personal interests, the equity financing method may be employed; on the contrary, if the shareholding of insiders is high, even though the debt agency cost is high due to pursuit of personal interests, the debt financing method may be employed. Based on the above, this study proposes the following hypotheses:

H2a: Shareholdings of insiders affect the positive correlation between the corporate debt agency cost and the financing choice of seasoned equity offerings.

H2b: Shareholdings of insiders affect the positive correlation between the corporate equity agency cost and the financing choice of debts.

H2c: Shareholdings of insiders affect the relationship between the corporate agency cost and the financing choice of private equity.

3. Research Design

3.1 The data

Our initial data is drawn from the Taiwan Economic Journal (TEJ) database for the 2006-2012 periods. To calculate the turnover of assets, the source data for this variable cover the 2005-2012 period. Our final sample consists of 5,759 firm-year observations. The sample is limited to publicly traded companies listed on the Taiwan Stock Exchange (TSE) and Over-The-Counter (OTC), excluded state-owned enterprise, financial service and insurance companies from the original sample because they have unique operating characteristics and are governed by specific regulations. Moreover, we deleted observations without complete financial data or discontinuous data or invalid data.

The electronics industry is the most heavily covered industry, more than half of the total sample. Followed by chemical, biotech and medical care industries and then electronic appliances & machinery industries, accounted for 6.64% 6.45% of the total samples, respectively.

3.2 Empirical model

This study adopts logistic models to examine Hypotheses 1a, 1b, and 1c. For H1a and H1b, we investigate the association between agency costs of lag-one period, seasoned equity offering financing, and debt financing. We employ agency costs of lag-one period to analyze the impact of debt financing in order to avoid the problem of endogeneity. These specifications are as follows:

$$SEODebt_{it} = a_0 + a_1 DAgency_{it-1} + a_2 EAgency_{it-1} + a_4 AS_{it} + a_5 ROA_{it} + e_{it} \quad (1)$$

$$SEODebt_{it} = a_0 + a_1 DAgency_{it-1} + a_2 OAgency_{it-1} + a_4 AS_{it} + a_5 ROA_{it} + e_{it} \quad (2)$$

Similarly, H1c examines the relationship between agency costs of lag-one period and private equity financing. To avoid endogeneity, we introduce agency costs of lag-one period to analyze the effects on private equity financing choice. We rely on the following regressions:

$$PRIDS_{it} = a_0 + a_1 DAgency_{it-1} + a_2 EAgency_{it-1} + a_4 AS_{it} + a_5 ROA_{it} + e_{it} \quad (3)$$

$$PRIDS_{it} = a_0 + a_1 DAgency_{it-1} + a_2 OAgency_{it-1} + a_4 AS_{it} + a_5 ROA_{it} + e_{it} \quad (4)$$

where SEODebt: a dummy variable for equity which equal to 1 if firms make seasoned equity offering and 0 if firm raise capital via banking, issuing bonds, or private equity financing. PRIDS: a dummy variable for private equity which equal to 1 if firms use private equity financing and 0 if firm raise capital via banking, issuing bonds, or seasoned equity offering. DebtSEO: a dummy variable for debts which equal to 1 if firms raise capital via banking and issuing bonds and 0 if firms make seasoned equity offering or private equity financing. DAgency: debt agency costs, measured by market-to-book ratio of equity (MB). Firms with higher MB represent higher the growth opportunities, whereas the higher debt agency costs then the lower long-term debt. EAgency: equity agency costs, measured by the sample's operating expense (selling and administrative expenses) ratio minus the median of operating expense ratios of all firms in an industry. OAgency: equity agency costs, measured by the sample's turnover of assets minus the median of turnover of assets of all firms in an industry. AS: the natural log of total assets, controlled for the firm's size. ROA: return on total assets, indicating that firm's profitability and managers use total assets to create profits for their shareholders. In addition, we also examine the relationship between current period's agency costs, seasoned equity offering, and private equity financing. The models are as follows:

$$SEODebt_{it} = a_0 + a_1 DAgency_{it} + a_2 EAgency_{it} + a_4 AS_{it} + a_5 ROA_{it} + e_{it} \quad (5)$$

$$PRIDS_{it} = a_0 + a_1 DAgency_{it} + a_2 EAgency_{it} + a_4 AS_{it} + a_5 ROA_{it} + e_{it} \quad (6)$$

As the above model, the measure our proxies for debt agency costs that adopts market to book ratio (MB), measured with the market value of equity divided by the book value of equity. Additionally, following Singh and Davidson (2003) and Tsai et al. (2008), our equity agency costs are measured by both turnover of assets and operating expenses ratio.

This study uses the sum of the cumulative shareholdings ratio held by executives, directors and supervisors, and blockholders to measure the shareholdings of insiders. To further test the relationship between shareholdings of insiders and firm's financing choices as well as test the effects of the interaction term between shareholdings of insiders and agency costs on the financing choice. To validate Hypotheses 2a and 2b and control for endogeneity, we adopt prior shareholdings of insiders, prior equity agency costs, and prior debt agency costs to analyze their impact on financing choices. Two regression models are presented in the following:

$$SEODebt_{it} = a_0 + a_1 DAgency_{it-1} + a_2 EAgency_{it-1} + a_3 InsideS_{it-1} + a_4 DAgency_{it-1} InsideS_{it-1} + a_5 EAgency_{it-1} InsideS_{it-1} + a_6 AS_{it} + a_7 ROA_{it} + e_{it} \quad (7)$$

$$SEODebt_{it} = a_0 + a_1 DAgency_{it-1} + a_2 OAgency_{it-1} + a_3 InsideS_{it-1} + a_4 DAgency_{it-1} InsideS_{it-1} + a_5 OAgency_{it-1} InsideS_{it-1} + a_6 AS_{it} + a_7 ROA_{it} + e_{it} \quad (8)$$

We rely on the following model to examine H2c, that shareholdings of insiders affect the relations between agency costs and private equity financing. As mentioned above, to avoid endogeneity problems, we introduce lag-one period's shareholdings of insiders and lag-one period's agency costs to analyze their effects on private equity financing choice. Two specifications are as follows:

$$PRIDS_{it} = a_0 + a_1 DAgency_{it-1} + a_2 EAgency_{it-1} + a_3 InsideS_{it-1} + a_4 DAgency_{it-1} InsideS_{it-1} + a_5 EAgency_{it-1} InsideS_{it-1} + a_6 AS_{it} + a_7 ROA_{it} + e_{it} \quad (9)$$

$$PRIDS_{it} = a_0 + a_1 DAgency_{it-1} + a_2 OAgency_{it-1} + a_3 InsideS_{it-1} + a_4 DAgency_{it-1} InsideS_{it-1} + a_5 OAgency_{it-1} InsideS_{it-1} + a_6 AS_{it} + a_7 ROA_{it} + e_{it} \quad (10)$$

Moreover, we further explore the relationship between shareholdings of insiders, agency costs and financing choices in the current period. The two research models are presented in the following:

$$SEODebt_{it} = a_0 + a_1 DAgency_{it} + a_2 EAgency_{it} + a_3 InsideS_{it} + a_4 DAgency_{it} InsideS_{it} + a_5 EAgency_{it} InsideS_{it} + a_6 AS_{it} + a_7 ROA_{it} + e_{it} \quad (11)$$

$$PRIDS_{it} = a_0 + a_1 DAgency_{it} + a_2 EAgency_{it} + a_3 InsideS_{it} + a_4 DAgency_{it} InsideS_{it} + a_5 EAgency_{it} InsideS_{it} + a_6 AS_{it} + a_7 ROA_{it} + e_{it} \quad (12)$$

where InsideS: shareholdings of insiders, which is the sum of the cumulative shareholdings ratio held by insiders (executives, directors and supervisors, and blockholders). DAgency*InsideS: the interaction term between debt agency costs and shareholdings of insiders. EAgency*InsideS: the interaction term between equity agency costs and shareholdings of insiders, which equity agency costs is measured by the firm's operating expense ratio minus the median of operating expense ratios of all firms in an industry. Oagency*InsideS: the interaction term between equity agency costs and shareholdings of insiders, which equity agency costs is measured by the firm's assets turnover minus the median of assets turnovers of all firms in an industry. The definitions of other variables are as the same as Equation (1).

3.3 Variable definitions

Debt agency cost (DAgency)

Prior literature concerning firms with higher investment opportunities usually have higher debt agency costs, thereby reduces the cost of debt financing. As R&D expenses and advertising expenses can be viewed as a proxy for firm's investment opportunities, denotes that R&D expenses and advertising expenses are inversely related to the long-term debt. In this study, we use market-to-book ratio (MB) as a measure of agency costs of debt, calculated with the market value of equity divided by the book value of equity. The companies with higher MB exhibit higher the growth opportunities, have higher agency costs of debt, and then lower long-term debt.

Equity agency cost (OAgency, EAgency)

Ang, Cole, and Lin (2000) measure agency costs of the firm that use two alternative efficiency ratios: the operating expense ratio, which is operating expense scaled by net sales, and the turnover of assets, which is net sales divided by total assets. The asset turnover is a measure of how effectively the firm's management deploys its assets. Higher turnover of asset is associated with greater efficiency for asset management, indicating that managers can generate higher cash flows and increase sales. In turn, lower turnover of asset indicates that managers invest in less efficiency activities. To control the impact of industry effects, we use OAgency as a proxy for agency costs, measured by the sample firm's asset turnover minus the median of asset turnovers of sample firms in an industry. Moreover, the measurement of equity agency costs (EAgency) is measured by the sample firm's selling and administrative expense (operating expense) ratio minus the median of operating expense ratio of sample firms in an industry. Companies with higher agency cost exhibit greater the volatility of return on assets, higher operating expense ratio, and lower asset turnover ratio.

Seasoned equity offering financing choice ($SEODebt_{it}$)

We apply logistic regression analysis to assess the company's financing choice, $SEODebt_{it}$ as measures of making seasoned equity offering. $SEODebt_{it}$ is a dummy variable that is equal to one if firms make seasoned equity offering and zero if firms raise the fund via banking, issuing bonds, or private equity financing.

Private equity financing choice ($PRIDS_{it}$)

We apply logistic regression analysis to assess the company's financing choices, $PRIDS$ as measures of using private equity. $PRIDS$ is a dummy variable that is equal to one if firms make private equity financing and zero if firm raise the fund via banking, issuing bonds, or seasoned equity offering.

Shareholdings of insiders ($InsideS$)

Total shares held by insider of a firm. This study measures insiders is according to Taiwanese Securities and Futures Bureau, Financial Supervisory Commission's brochures, contain executives, directors and supervisors, and blockholders.

4. The Results

4.1 Descriptive statistics

The descriptive statistics for each variable in regression models of this study are shown in Table 1. The findings show that the mean of $DebtSEO_{it}$ is 0.9413, implying that under lack of funds, the firm prefers to engage in debt financing, rather than in seasoned equity offerings. This is consistent with the traditional financing pecking order theory. The mean of $SEODebt_{it}$ is 0.2012, indicating that the company will be less seasoned equity offerings to finance.

The mean of $PRIDS_{it}$ is 0.0803, which represents the company's financing decisions do not tend to private equity (private placement) but debt or seasoned equity offerings for financing. Cronqvist and Nilsson (2005) find that, no matter what the agency cost financing decisions, the firm with opaque information tend to choose private equity financing due to cost factors. However, Lee and Kocher (2001) find that the firm with private placement will has a smaller firm size, high growth, and better financial position than the firm with seasoned equity offerings.

In addition to stock's market-to-book ratio (MB), the firm's selling and administrative expenses minus the industry's median of selling and administrative expenses, and the firm's turnover of assets minus the industry's median of turnover of assets to measure equity agency cost, we also use the sum of ratios of insider ownership ($InsideS_{it-1}$) to measure shareholdings of insiders. The maximum and minimum values of $InsideS_{it-1}$ are 99.9500 and 7.8000, respectively, and with a standard deviation of 17.0849, show that corporate insiders shareholding ratios $InsideS_{it-1}$ has a great difference among the sample firms. The possible reason of its mean of 44.0689 is that most of companies are family or group type in Taiwan.

Moreover, the untabulated results of correlation analysis show that correlation coefficients at all between two variables are less than 0.65, implying that there is no multicollinearity among these variables.

4.2 Prior agency cost and seasoned equity offerings

Model 1 of Table 2 use Logistic regression to analyze the association between previous period's agency costs and seasoned equity offerings, which $DAgency_{it-1}$ proxies for the debt agency costs and is measured by equity's market to book ratio. The findings show that $DAgency_{it-1}$ is significantly positively related to seasoned equity offerings dummy variable, implying that the firm with higher previous period's debt agency cost, it tends to choose seasoned equity offering in current period. The empirical results are consistent with our expectations that agency costs are endogenous, that is, the current period's financing decisions is affect by the prior period's debt agency cost. A higher MB means the company has higher growth opportunity, and its debt agency cost is higher, so that the company's long-term debt is lower. The empirical result supports Hypothesis 1a. As Kim and Weisbach (2008), a higher MB company is more likely to choose equity financing than a lower MB company.

On the other hand, Mode 1 in Table 2 uses $EAgency_{it-1}$ represents the previous period's equity agency cost, which is measured by the previous period's selling and administrative expenses minus the industry's median of selling and administrative expenses. The findings show that the period's equity agent cost is significantly negatively correlated to seasoned equity offerings, indicating that the sample companies' previous period's equity agency costs are higher, their possibilities of engaging in seasoned equity offerings are lower. When higher equity agency costs, operating expense ratio is higher. The empirical results support the hypothesis inference 1b, and agency costs have are endogenous as expectations, that is, when the previous period's equity agency cost of the company is higher, the company will tend to choose debt financing in current period.

Model 2 in Table 2 uses $OAgency_{it-1}$ measure the company's equity agency cost, which is measured by previous period's turnover of assets minus the industry's median of turnover of assets. The findings show that the company's previous period's debt agency cost is higher, the more inclined to choose seasoned equity offerings financing in the current period. Therefore, it is consistent with the results those in the model 1 of Table 2, and empirical results fit for the agency cost of this study is expected to have endogenous, that the current period's financing decisions is affect by the previous period's debt agency cost.

On the other hand, turnover of asset is used to measure efficiency of a firm. If the turnover rate is higher, indicating that managers have better capabilities of asset management, allows assets to generate higher cash flows and sales volume, therefore the lower agency cost of equity. The findings of Model 2 show that the previous period's equity agency cost $OAgency_{it-1}$ is positively correlated with the seasoned equity offerings. This means that the higher equity agency costs (the lower turnover of assets), the company is more likely to choose debt financing. Our results are consistent with Myers

and Majluf (1984), and the empirical results support the hypothesis 1b, that the company's equity agency costs is higher, would tend to choose the debt financing.

4.3 Prior agency cost and private equity

Model 1 in Table 3 uses $DAgency_{it-1}$ to measure the debt agency costs, which is equity's market to book ratio. The findings show that $DAgency_{it-1}$ is significantly positively correlated with private equity financing dummy variable ($PRIDS_{it}$), implying that the prior period's debt agency costs are higher, the company tends to choose private equity financing in current period. that is, the prior period's growth opportunity is higher (debt agency costs is higher), the company is more likely to choose private equity, and its long-term debt is lower. The empirical result is consistent with our expectation, debt agency costs have endogenous, that the current financing decision is influenced by the previous agency cost of debt. The empirical result supports Hypothesis 1c.

The model 1 in Table 3 show, the company's previous equity agency cost ($EAgency_{it-1}$) is negatively related to private equity financing ($PRIDS_{it}$). This means that when the company's ratio of selling and administrative expenses is higher, its equity agency cost is higher, and then the company is unlikely to use private equity financing. This result supports the hypothesis 1c. At the same time, the empirical results are also consistent with expectations, which the current private equity financing decision is affected by the previous period's equity agency cost.

The Model 2 of Table 3 use $DAgency_{it-1}$ to measure the debt agency cost. Model 2 uses Logistic regression to explore the association between previous period's agency costs and the private equity. The empirical results show, prior period's debt agency costs $DAgency_{it-1}$ is positively and significantly related to private equity financing in current period.

In addition, higher turnover of assets indicates asset management capabilities of managers are higher, and then they can create more cash flows and sales, so the equity agency cost is lower. The results of model 2 in Table 3 show that the previous period's equity agency cost $OAgency_{it-1}$ is positively correlated with private equity financing, implying that the higher of the previous cash flows and sales of company, its equity agency costs is lower, so that manager is more likely to choose private equity to finance. In contrast, the managers invest in inefficient productivity, its equity agency cost is higher, companies do not tend to choose private equity. The empirical result supports Hypothesis 1c.

4.4 Current period's agency cost, seasoned equity offerings, and private equity

Model 1 in Table 4 uses $DAgency_{it}$ to measure debt agency costs (market to book ratio). The findings show that $DAgency_{it}$ and seasoned equity offerings dummy variable ($SEODebtit$) have significantly and positively correlation, current debt agency cost is higher, the company tends to choose seasoned equity offerings. The empirical result supports Hypothesis 1a. Overall, from the results of Tables 2 and 4, whether the previous or the current periods' debt agent costs are positively correlated with the choice of seasoned equity offerings in current period.

Model 1 of Table 4 uses $EAgency_{it}$ show the company's current equity agency costs, which is the firm's current period's selling and administrative expenses minus industry median of selling and administrative expenses. When the equity agency costs higher, the larger the ratio of operating expenses is. The findings show that the current period's equity agency costs and the financing choice of seasoned equity offerings is significantly negatively correlation, means that the higher equity agency cost of current period, the company is unlikely to choose seasoned equity offerings. The empirical result supports Hypothesis 1b. Overall, from the results of Tables 2 and 4, either the previous period or the current equity agency costs are negatively related to current seasoned equity offerings.

In addition, Model 2 in Table 4 examines the association between agency costs in the current period and the private equity financing. The findings show that private equity financing is positively related to $DAgency_{it}$ dummy variable ($PRIDS_{it}$), showing a higher current debt agency costs, the company tend to conduct private equity financing. The empirical result supports Hypothesis 1c. Overall, both previous period and current period debt agency costs are positively correlated with the current period's private equity financing.

Table 4 also shows that equity agency cost $EAgency_{it}$ is negatively related to private equity financing ($PRIDS_{it}$). This means that when ratio of selling and administrative expenses is higher, equity agency cost is higher, so the companies do not tend to use private equity financing. The empirical result supports Hypothesis 1c. Integrated mentioned above, both previous or current periods' equity agency costs are negatively correlated with the current period's private equity financing, so that equity agency cost is higher, the company does not tend to be more interest in fund-raising of equity

4.5 Shareholdings of insiders, prior agency cost, and seasoned equity offerings

Model 1 in Table 5 examines the effect of insiders' shareholdings on the relationship between prior agency cost and seasoned equity offerings. The finding show that under considering shareholdings of insiders, the firm with higher prior debt agency cost $DAgency_{it-1}$ tends to engage in seasoned equity offerings financing, and this result is consistent with our expectation. The higher MB implies the higher growth opportunity of a firm, so that the firm has higher agency cost and lower debt financing. Our result supports Hypothesis H1a.

In Model 1 of Table 5, we also adopt $EAgency_{it-1}$ to measure prior equity agency cost. The finding show that under considering shareholdings of insiders, prior equity agency cost of a firm is negatively related to seasoned equity offerings financing, implying that the firm with higher prior equity agency cost does not tend to engage in seasoned equity offerings rather debt financing, so the result is consistent with our expectation and supports Hypothesis 1b.

However, the result in Model 1 of Table 5 shows that the interaction term between insiders' shareholdings and prior debt agency cost is unrelated to current seasoned equity offering financing. This result implies that when higher insiders' shareholdings, the firm with higher debt agency cost does not has higher possibility of engaging in seasoned equity offerings, which supports hypothesis

H2a. The possible reason is that most of large firms are family or group types in Taiwan. Moreover, the interaction term between insiders' shareholdings and prior equity agency cost $EAgency_{it-1}$ is positively related to current seasoned equity offering financing, which supports hypothesis H2b.

From Model 2 of Table 5, we find that under considering shareholdings of insiders, the firm with higher prior debt agency cost $DAgency_{it-1}$ tends to engage in seasoned equity offerings financing, and this result supports Hypothesis H1a. Moreover, the turnover of assets implies assets utilization, the firm with higher turnover of assets has lower equity agency cost $OAgency_{it-1}$. The result shows that $OAgency_{it-1}$ is unrelated to seasoned equity offerings, so that our result does not support Hypothesis H1b.

The result in Model 2 of Table 5 shows that the interaction term between insiders' shareholdings and prior debt agency cost is also unrelated to current seasoned equity offering financing. This result also supports hypothesis H2a. The possible reason is that most of large firms are family or group types in Taiwan. Moreover, the interaction term between insiders' shareholdings and prior equity agency cost $OAgency_{it-1}$ is unrelated to current seasoned equity offering financing, which supports hypothesis H2b.

4.6 Shareholdings of insiders, prior agency cost, and private equity financing

Model 1 in Table 6 examines the effect of insiders' shareholdings on the relationship between prior agency cost and private equity financing. The finding show that under considering shareholdings of insiders, the firm with higher prior debt agency cost $DAgency_{it-1}$ tends to engage in private equity financing, and this result is consistent with our expectation and supports Hypothesis H1c.

In Model 1 of Table 6, we also adopt $EAgency_{it-1}$ to measure prior equity agency cost. The finding show that under considering shareholdings of insiders, prior equity agency cost of a firm is negatively related to private equity financing, implying that the firm with higher prior equity agency cost does not tend to engage in private equity financing, so the result supports Hypothesis 1c.

However, the result in Model 1 of Table 6 shows that the interaction term between insiders' shareholdings and prior debt agency cost is unrelated to current private equity financing, which supports hypothesis H2c. The possible reason is that most of large firms are family or group types in Taiwan. Moreover, the interaction term between insiders' shareholdings and prior equity agency cost $EAgency_{it-1}$ is unrelated to current private equity financing, which supports hypothesis H2c.

From Model 2 of Table 6, we find that under considering shareholdings of insiders, the prior debt agency cost $DAgency_{it-1}$ is unrelated to private equity financing, and this result does not support Hypothesis H1c. Moreover, when using turnover of assets to measure prior equity agency cost $OAgency_{it-1}$. The result shows that prior equity agency cost is unrelated to private equity financing, so that the result also does not support Hypothesis H1c.

The result in Model 2 of Table 6 shows that the interaction term between prior period's insiders' shareholdings and prior period's debt agency cost is unrelated to current period's private equity financing. This result still does not support hypothesis H2c. Moreover, the interaction term between

prior period's insiders' shareholdings and prior period's equity agency cost $OA_{Agency_{it-1}}$ is unrelated to current period's private equity financing, which still does not support hypothesis H2c.

4.7 Shareholdings of insiders, current agency cost and seasoned equity offerings

Model 1 in Table 7 examines the effect of insiders' shareholdings on the relationship between current period's agency cost and seasoned equity offering. The findings show that under considering shareholdings of insiders, the firm with higher current period's debt agency cost $DA_{Agency_{it}}$ tends to engage in private equity financing in current period, and this result supports Hypothesis H1a.

Overall, both prior and current periods' debt agency costs are positively related to seasoned equity offerings, implying that the firm with higher debt agency cost tends to conduct current period's seasoned equity offerings, our results support Hypothesis H1a.

However, when using $EA_{Agency_{it}}$ to measure equity agency cost, we find that current equity agency cost is unrelated to current seasoned equity offerings, so our result does not support Hypothesis 1b.

Model 1 of Table 7 shows that the interaction term between current insiders' shareholdings and current debt agency cost is negatively related to current seasoned equity offering financing. This result implies that when higher insiders' shareholdings, the firm with higher debt agency cost does not have higher possibility of engaging in seasoned equity offerings, which supports hypothesis H2a. Moreover, the interaction term between current insiders' shareholdings and current equity agency cost $EA_{Agency_{it}}$ is unrelated to current seasoned equity offering financing, which also does not support hypothesis H2b.

On the other hand, in Model 2 of Table 7, the result shows that under considering shareholdings of insiders, the firm with higher current period's debt agency cost $DA_{Agency_{it}}$ tends to engage in private equity financing in current period, and this result supports Hypothesis H1c.

Overall, both prior and current periods' debt agency costs are positively related to private equity financing, implying that the firm with higher current debt agency cost tends to conduct private equity financing in current period, our results support Hypothesis H1c.

Model 2 in Table 7 shows that under considering shareholdings of insiders, the firm with higher current period's equity agency cost $EA_{Agency_{it}}$ does not tend to engage in private equity financing in current period, and this result supports Hypothesis H1c. The result in Model 2 of Table 7 shows that the interaction term between current insiders' shareholdings and current debt agency cost is unrelated to current private equity financing. Meanwhile, the interaction term between current insiders' shareholdings and current equity agency cost $EA_{Agency_{it}}$ is also unrelated to current private equity financing.

5. Conclusions

This paper examines whether firms tend to choose seasoned equity offering for financing when the debt agency costs of prior and current periods are high, and whether firms tend to choose private equity method for financing when the debt agency cost of prior and current periods are high. Next, we

explore whether the shareholdings of insiders would affect the relationship between debt agency cost and seasoned equity offerings, and whether the shareholdings of insiders would affect the relationship between equity agency cost and debt financings. We also examine whether the shareholdings of insiders would affect the relationship between agency cost and private equity financing of firms.

The findings show that both prior and current periods' debt agency costs are positively related to seasoned equity offerings, implying that the firm with higher debt agency cost tends to conduct current period's seasoned equity offerings. Next, both prior and current periods' debt agency costs are positively related to private equity financing, implying that the firm with higher current debt agency cost tends to conduct private equity financing in current period. As for equity agency cost, we also find the relationship that both current and prior periods' equity agency costs are negatively related to seasoned equity offerings, implying that the firm with higher equity agency cost tends to conduct debt offerings in current period.

Under considering shareholdings of insiders, the evidences document that both prior and current periods' debt agency costs are positively related to seasoned equity offerings, and both prior and current periods' debt agency costs are positively related to private equity financing, implying that the firm with higher current debt agency cost tends to conduct private equity financing in current period. However, we only find that prior periods' equity agency costs are negatively related to seasoned equity offerings.

However, the interaction term between insiders' shareholdings and prior debt agency cost is unrelated to current seasoned equity offering financing, implying that the insiders' shareholdings would affect the relationship between debt agency cost does and the choice of seasoned equity offering. Moreover, the interaction term between insiders' shareholdings and prior equity agency cost is positively related to current seasoned equity offering financing.

Moreover, the interaction term between insiders' shareholdings and prior debt agency cost is also unrelated to current seasoned equity offering financing, and the interaction term between insiders' shareholdings and prior equity agency cost is unrelated to current seasoned equity offering financing. Moreover, the interaction term between insiders' shareholdings and prior debt agency cost is unrelated to current private equity financing, and the interaction term between insiders' shareholdings and prior equity agency cost is unrelated to current private equity financing. As for private equity financing, the interaction term between prior insiders' shareholdings and prior debt agency cost is unrelated to current private equity, and the interaction term between prior insiders' shareholdings and prior equity agency cost is unrelated to current private equity.

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Table 1 Descriptive statistics

	Mean	Std. Dev.	Minimum	Maximum
DAgency	1.5688	2.6768	0.0700	119.6300

EAgency	0.1171	0.6078	-1.1500	6.5600
OAgency	3.6663	25.3511	-29.8800	762.1200
InsideS	44.0689	17.0849	7.8000	99.9500
AS	6.7771	0.6495	5.0330	9.3106
ROA	6.4258	8.3334	-71.9400	51.5600
SEODebt	0.2012	0.4009	0.0000	1.0000
PRIDS	0.0803	0.2717	0.0000	1.0000

1. Number of total observations is 5319.
2. Variables Definition:
SEODebt is an equity dummy variable, which sets to 1 if the firm chooses seasoned equity offering financing and set to 0 if the firm chooses bank debt, issuing bond, or issuing private equity financings. PRIDS is a private equity dummy variable, which sets to 1 if the firm chooses private equity and set to 0 if the firm chooses bank debt, issuing bond, and seasoned equity offering financings. DAgency is the debt agency cost, which is measured by market to book ratio of equity. EAgency is the equity agency cost, which is measured by the firm's selling and administrative expenses ratio minus the industry median of selling and administrative expenses ratios of all firms in an industry. OAgency is the equity agency cost, which is measured by the firm's turnover of assets minus the industry median of turnovers of assets of all firms in an industry. InsideS is the shareholdings of insiders, which is the sum of managers' shareholdings, directors and supervisors' shareholdings, and blockholders' shareholdings. AS is the nature log of total assets, which controls firm size. ROA is return of assets, which represents the operation performance of a firm.

Table 2 Prior agency cost and seasoned equity offering choice

$$SEODebt_{it} = a_0 + a_1 DAgency_{it-1} + a_2 EAgency_{it-1} + a_4 AS_{it} + a_5 ROA_{it} + e_{it}$$

$$SEODebt_{it} = a_0 + a_1 DAgency_{it-1} + a_2 OAgency_{it-1} + a_4 AS_{it} + a_5 ROA_{it} + e_{it}$$

SEODebt	Model 1 (EAgency _{it-1})		Model 2 (OAgency _{it-1})	
	Coef.	z value (P> z)	Coef.	z value (p value)
DAgency _{it-1}	0.2578	9.1900 (0.0000)	0.2414	8.7300 (0.0000)
EAgency _{it-1}	-0.1763	-2.8500 (0.0040)		

OAgency _{it-1}			0.0085	4.1700 (0.0000)
AS	-0.1816	-3.1700 (0.0010)	-0.1285	-2.2100 (0.0270)
ROA	-0.0337	-7.8300 (0.0000)	-0.0314	-7.2700 (0.0000)
Cons.	-0.3454	-0.8900 (0.3720)	-0.7442	-1.8800 (0.0600)
Number of obs.	5319		5319	
LR chi2(5)	181.06		199.04	
Prob > chi2	0.0000		0.0000	
Pseudo R ²	0.0339		0.0373	

Variables Definition:

SEODebt is an equity dummy variable, which sets to 1 if the firm chooses seasoned equity offering financing and set to 0 if the firm chooses bank debt, issuing bond, or issuing private equity financings. DAgency is the debt agency cost, which is measured by market to book ratio of equity. EAgency is the equity agency cost, which is measured by the firm's selling and administrative expenses ratio minus the industry median of selling and administrative expenses ratios of all firms in an industry. OAgency is the equity agency cost, which is measured by the firm's turnover of assets minus the industry median of turnovers of assets of all firms in an industry. AS is the nature log of total assets, which controls firm size. ROA is return of assets, which represents the operation performance of a firm.

Table 3 Prior agency cost and private equity choice

$$PRIDS_{it} = a_0 + a_1 DAgency_{it-1} + a_2 EAgency_{it-1} + a_4 AS_{it} + a_5 ROA_{it} + e_{it}$$

$$PRIDS_{it} = a_0 + a_1 DAgency_{it-1} + a_2 OAgency_{it-1} + a_4 AS_{it} + a_5 ROA_{it} + e_{it}$$

PRIDS	Model 1 (EAgency _{it-1})		Model 2 (OAgency _{it-1})	
variable	Coef.	z value (P> z)	Coef.	z value (p value)
DAgency _{it-1}	0.1188	3.0800 (0.0020)	0.0854	2.2800 (0.0230)
EAgency _{it-1}	-0.7074	-5.8400 (0.0000)		
OAgency _{it-1}			0.0086	3.6500 (0.0000)
AS	-0.5871	-5.9100 (0.0000)	-0.5204	-5.1600 (0.0000)
ROA	-0.0887	-13.6700 (0.0000)	-0.0879	-13.5400 (0.0000)
Cons.	1.6273	2.4600 (0.0140)	1.1681	1.7400 (0.0820)
Number of obs.	5319		5319	
LR chi2(5)	445.57		425.91	
Prob > chi2	0.0000		0.0000	
Pseudo R ²	0.1499		0.1433	

Variables Definition:

PRIDS is a private equity dummy variable, which sets to 1 if the firm chooses private equity and set to 0 if the firm chooses bank debt, issuing bond, and seasoned equity offering financings. DAgency is the debt agency cost, which is measured by market to book ratio of equity. EAgency is the equity agency cost, which is measured by the firm's selling and administrative expenses ratio minus the industry median of selling and administrative expenses ratios of all firms in an industry. OAgency is the equity agency cost, which is measured by the firm's turnover of assets minus the industry median of turnovers of assets of all firms in an industry. AS is the nature log of total assets, which controls firm size. ROA is return of assets, which represents the operation performance of a firm.

Table 4 Current agency cost, seasoned equity offering and private equity choices

$SEODebt_{it} = a_0 + a_1 DAgency_{it} + a_2 EAgency_{it} + a_4 AS_{it} + a_5 ROA_{it} + e_{it}$ $PRIDS_{it} = a_0 + a_1 DAgency_{it} + a_2 EAgency_{it} + a_4 AS_{it} + a_5 ROA_{it} + e_{it}$		
	Model 1 (independent variable: SEODebt)	Model 2 (independent variable: PRIDS)

variable	Coef.	zvalue (P> z)	Coef.	z value (p value)
DAgency _{it}	0.2344	8.0100 (0.0000)	0.1537	4.2000 (0.0000)
EAgency _{it}	-0.1275	-2.0900 (0.0370)	-0.5477	-4.7500 (0.0000)
AS	-0.1911	-3.3300 (0.0010)	-0.6103	-6.1000 (0.0000)
ROA	-0.0287	-6.6000 (0.0000)	-0.0829	-12.8800 (0.0000)
Cons.	-0.2671	-0.6900 (0.4930)	1.7119	2.5900 (0.0100)
Number of obs.	5319		5319	
LR chi2(5)	159.11		430.33	
Prob>chi2	0.0000		0.0000	
Pseudo R ²	0.0298		0.1447	

Variables Definition:

SEODebt is an equity dummy variable, which sets to 1 if the firm chooses seasoned equity offering financing and set to 0 if the firm chooses bank debt, issuing bond, or issuing private equity financings. PRIDS is a private equity dummy variable, which sets to 1 if the firm chooses private equity and set to 0 if the firm chooses bank debt, issuing bond, and seasoned equity offering financings. DAgency is the debt agency cost, which is measured by market to book ratio of equity. EAgency is the equity agency cost, which is measured by the firm's selling and administrative expenses ratio minus the industry median of selling and administrative expenses ratios of all firms in an industry. AS is the nature log of total assets, which controls firm size. ROA is return of assets, which represents the operation performance of a firm.

Table 5 Insiders' shareholdings, prior agency cost and seasoned equity offering choice

$$SEODebt_{it} = a_0 + a_1 DAgency_{it-1} + a_2 EAgency_{it-1} + a_3 InsideS_{it-1} + a_4 DAgency_{it-1} InsideS_{it-1} + a_5 EAgency_{it-1} InsideS_{it-1} + a_6 AS_{it} + a_7 ROA_{it} + e_{it}$$

$$SEODebt_{it} = a_0 + a_1 DAgency_{it-1} + a_2 OAgency_{it-1} + a_3 InsideS_{it-1} + a_4 DAgency_{it-1} InsideS_{it-1} + a_5 OAgency_{it-1} InsideS_{it-1} + a_6 AS_{it} + a_7 ROA_{it} + e_{it}$$

SEODebt	Model 1 (EAgency1)		Model 2 (OAgency1)	
variable	Coef.	z value (P> z)	Coef.	z value (p value)
DAgency _{it-1}	0.2983	3.6300 (0.0000)	0.2457	3.0200 (0.0020)
EAgency _{it-1}	-0.5346	-3.2300 (0.0010)		
OAgency _{it-1}			0.0089	1.6000 (0.1100)
InsideS _{it-1}	0.0038	1.2000 (0.2310)	0.0033	1.0300 (0.3030)
DAgency _{it-1} InsideS _{it-1}	-0.0009	-0.6000 (0.5490)	-0.0002	-0.1200 (0.9030)
EAgency _{it-1} InsideS _{it-1}	0.0083	2.4000 (0.0160)		
OAgency _{it-1} InsideS _{it-1}			-0.0000	-0.0900 (0.9260)
AS	-0.1574	-2.7000 (0.0070)	-0.1138	-1.9300 (0.0540)
ROA	-0.0351	-8.0600 (0.0000)	-0.0321	-7.3600 (0.0000)
Cons.	-0.6723	-1.5400 (0.1250)	-0.9822	-2.2100 (0.0270)
Number of obs.	5319		5319	
LR chi2(5)	188.74		201.12	
Prob > chi2	0.0000		0.0000	
Pseudo R ²	0.0353		0.0377	

Variables Definition:

SEODebt is an equity dummy variable, which sets to 1 if the firm chooses seasoned equity offering financing and set to 0 if the firm chooses bank debt, issuing bond, or issuing private equity financings. DAgency is the debt agency cost, which is measured by market to book ratio of equity. EAgency is the equity agency cost, which is measured by the firm's selling and administrative expenses ratio minus the industry median of selling and administrative expenses ratios of all firms in an industry. OAgency is the equity agency cost, which is measured by the firm's turnover of assets minus the industry median of turnovers of assets of all firms in an industry. InsideS is the shareholdings of insiders, which is the sum of managers' shareholdings, directors and supervisors' shareholdings, and blockholders' shareholdings. AS is the nature log of total assets, which controls firm size. ROA is return of assets, which represents the operation performance of a firm.



Table 6 Insiders' shareholdings, prior agency cost and private equity choice

$$PRIDS_{it} = a_0 + a_1 DAgency_{it-1} + a_2 EAgency_{it-1} + a_3 InsideS_{it-1} + a_4 DAgency_{it-1} InsideS_{it-1} + a_5 EAgency_{it-1} InsideS_{it-1} + a_6 AS_{it} + a_7 ROA_{it} + e_{it}$$

$$PRIDS_{it} = a_0 + a_1 DAgency_{it-1} + a_2 OAgency_{it-1} + a_3 InsideS_{it-1} + a_4 DAgency_{it-1} InsideS_{it-1} + a_5 OAgency_{it-1} InsideS_{it-1} + a_6 AS_{it} + a_7 ROA_{it} + e_{it}$$

PRIDS	Model 1 (EAgency _{it-1})		Model 2 (OAgency _{it-1})	
variables	Coef.	z value (P> z)	Coef.	z value (p value)
DAgency _{it-1}	0.2037	1.6300 (0.1040)	0.1137	0.9500 (0.3410)
EAgency _{it-1}	-1.0971	-3.4000 (0.0010)		
OAgency _{it-1}			0.0095	1.4600 (0.1460)
InsideS _{it-1}	-0.0013	-0.2600 (0.7910)	-0.0036	-0.7700 (0.4400)
DAgency _{it-1} ×InsideS _{it-1}	-0.0016	-0.6800 (0.4950)	-0.0005	-0.2100 (0.8340)
EAgency _{it-1} ×InsideS _{it-1}	0.0091	1.3200 (0.1860)		
OAgency _{it-1} ×InsideS _{it-1}			-0.0000	-0.1300 (0.8950)
AS	-0.6024	-5.9000 (0.0000)	-0.5454	-5.2600 (0.0000)
ROA	-0.6886	-13.4600 (0.0000)	-0.0867	-13.2200 (0.0000)
Cons.	1.7594	2.3700 (0.0180)	1.4758	1.9600 (0.0500)
Number of obs.	5319		5319	

LR chi2(5)	449.27	427.74
Prob > chi2	0.0000	0.0000
Pseudo R ²	0.1511	0.1439

Variables Definition: PRIDS is a private equity dummy variable, which sets to 1 if the firm chooses private equity and set to 0 if the firm chooses bank debt, issuing bond, and seasoned equity offering financings. DAgency is the debt agency cost, which is measured by market to book ratio of equity. EAgency is the equity agency cost, which is measured by the firm's selling and administrative expenses ratio minus the industry median of selling and administrative expenses ratios of all firms in an industry. OAgency is the equity agency cost, which is measured by the firm's turnover of assets minus the industry median of turnovers of assets of all firms in an industry. InsideS is the shareholdings of insiders, which is the sum of managers' shareholdings, directors and supervisors' shareholdings, and blockholders' shareholdings. AS is the nature log of total assets, which controls firm size. ROA is return of assets, which represents the operation performance of a firm.

Table 7 Insiders' shareholdings, current agency cost and financing choice

$$SEODebt_{it} = a_0 + a_1 DAgency_{it} + a_2 EAgency_{it} + a_3 InsideS_{it} + a_4 DAgency_{it} InsideS_{it} + a_5 EAgency_{it} InsideS_{it} + a_6 AS_{it} + a_7 ROA_{it} + e_{it}$$

$$PRIDS_{it} = a_0 + a_1 DAgency_{it} + a_2 EAgency_{it} + a_3 InsideS_{it} + a_4 DAgency_{it} InsideS_{it} + a_5 EAgency_{it} InsideS_{it} + a_6 AS_{it} + a_7 ROA_{it} + e_{it}$$

	Model 1 (independent variable: SEODebt)		Model 2 (independent variable: PRIDS)	
variables	Coef.	z value (P> z)	Coef.	z value (p value)
DAgency	0.4684	6.0000 (0.0000)	0.2463	2.2000 (0.0280)
EAgency	-0.1124	-0.7100 (0.4780)	-0.9971	-3.1600 (0.0020)
InsideS	-0.0059	-1.9800 (0.0480)	0.0132	3.1500 (0.0020)
DAgency _{it} ×InsideS _{it}	-0.0044	-3.4000 (0.0010)	-0.0018	-1.0500 (0.2920)
EAgency _{it} ×InsideS _{it}	-0.0005	-0.1400 (0.8860)	0.0100	1.5900 (0.1130)
AS	-0.1859	-3.1900 (0.0010)	-0.5360	-5.3200 (0.0000)
ROA	-0.0308	-6.9700 (0.0010)	-0.0855	-13.0500 (0.0000)
Cons.	-0.5960	-1.3600 (0.1750)	0.6266	0.8500 (0.3970)
Number of obs.	5319		5319	
LR chi2(5)	169.22		442.48	
Prob > chi2	0.0000		0.0000	
Pseudo R2	0.0317		0.1488	

Variables Definition:

SEODebt is an equity dummy variable, which sets to 1 if the firm chooses seasoned equity offering financing and set to 0 if the firm chooses bank debt, issuing bond, or issuing private equity financings. PRIDS is a private equity dummy variable, which sets to 1 if the firm chooses private equity and set to 0 if the firm chooses bank debt, issuing bond, and seasoned equity offering financings. DAgency is the debt agency cost, which is measured by market to book ratio of equity. EAgency is the equity agency cost, which is measured by the firm's selling and administrative expenses ratio minus the industry median of selling and administrative expenses ratios of all firms in an industry. InsideS is the shareholdings of insiders, which is the sum of managers' shareholdings, directors and supervisors' shareholdings, and blockholders' shareholdings. AS is the nature log of total assets, which controls firm size. ROA is return of assets, which represents the operation performance of a firm.

Law 2

Venezia

2015/07/22 Wednesday 17:00-18:00

Session Chair: *Prof. Jongho Kim*

ISBSS-4377

**Local Wisdom in Indonesia Legal Policy in Establishing the Survivors' Land
Ownership Rights in Disaster Area: Study at Mount Merapi's Eruption**

Maria Hutapea | *Atma Jaya Yogyakarta Law School*

ISBSS-4643

**The Harmonious Convergence of Philanthropy and Capitalism as the Root of Corporate
Social Contribution**

Jongho Kim | *Hoseo University*

ISBSS-4673

**Innovation of Democracy Reform Model under the Sovereign Governance of Four
Balancing State Powers in Thailand**

Suraphol Srivithaya | *Rangsit University*

ISBSS-4251

Mare Nostrum on the International Law of the Sea

Kaweepol Sawangpaew | *Burapha University*

ISBSS-4377

**Local Wisdom In Indonesia Legal Policy In Establishing The Survivors'
Land Ownership Rights In Disaster Area: Study At Mount Merapi'S
Eruption¹**

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Abstract

This paper sets out to explain how local wisdom influenced Indonesian Government legal policy in establishing land ownership rights following the eruption of Mount Merapi in Yogyakarta Special Region. It is based on field research conducted in 2003 with survivors of the eruption from Cangkringan and Ngemplak Districts. The eruptions in October and November 2010 caused devastating losses in the surrounding areas due to the hot and cold lava flowing from Mount Merapi, resulting in the deaths of 302 people, the destruction of 3401 houses, the environment, land, roads, bridges, electricity, dams and the livelihood and economy of the local people.

The findings show that in general, Indonesian land laws do not yet regulate establishing ownership rights for survivors of the eruptions or the protection of existing rights, however, in emergency situations such as the Mount Merapi eruption, local wisdom has influenced the government's legal policy. Several local government legal policies were taken in relation to this issue. Firstly, the local government together with several aid bodies built temporary living shelters for all survivors to live in for one year. Secondly, the local government gave 30 million rupiah (approximately USD 3,095) to each family to buy building materials to build a house. Thirdly, the local government gave village land and land certificates to survivors who did not have land in the areas those villagers had been relocated to. Fourthly, the local government encouraged survivors who had land in the areas appointed by the local government to build houses on that land, and provided them with 5.5 million rupiah as compensation. Fifthly, the local government supported the relocation of groups of villagers to areas where they would build their houses.

¹ This paper is presented at 2015 the 4th International Symposium on Business and Social Sciences in Sapporo, Japan

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*Even though existing laws are yet to regulate the establishing of land ownership rights for survivors of the disaster or protecting existing land rights, local wisdom could be used by the local government to create policies in relation to establishing and protecting the land ownership rights of survivors. Indonesia is susceptible area to disaster. It needs to regulate the determination on providing Ownership Rights on land for the disaster victims. It is *Ius Constituendum* for Indonesia State. The law is for human, instead of human for law.*

Key words: policy, local wisdom, land ownership rights, disaster

1. Introduction

Indonesia's geographical landscape is susceptible to natural disasters, especially from her volcanic belt. Natural disasters are often unexpected, and when they occur, are often unplanned for. Natural disasters cause destruction and often deaths. Destruction can be environmental and infrastructural. Communities struck by natural disasters lose their properties, livelihood, houses and even land, upon which sits their houses and places of work. (Research and Development, Indonesian Ministry of Law and Human Rights, 2012).

Land plays an important role in the life of the Indonesian nation and state. Land is considered to be a living site, for livelihood, work and rest. The land, the waters and the natural resources should be used to the greatest benefit of the people, therefore, these are managed instead of owned by the State in accordance with Article 33 (3) of the 1945 Constitution of the Republic of Indonesia. To allow this to happen, Basic Agrarian Law (BAL) No. 5 of 1960 was enacted by the State. Article 2 (2) b BAL stipulates the State's right to determine and regulate the legal relationship between the people and the earth, water and airspace the State can grant land rights in relation to the surface of the earth.

One of the land rights that can be granted by the State is land ownership. The right of land ownership based on Article 20 (1) BAL is hereditary, the strongest and fullest right on land which one can hold, subject to the provisions contained in Article 6 BAL. Elucidation of Article 20 BAL stipulates that this article mentions the characteristics of the right of ownership which differentiates it from other rights. The words strongest and fullest are used to distinguish the land ownership right from the right to cultivate, right to use structures, right of use and other rights. Besides these characteristics, land ownership right has a social function. Based on BAL and similar regulations in the land field such as Government Regulation No. 38 of 1963 the State can grant land ownership rights to legal entities such as banks established by the state, peasant group co-operations, religious institutions (Tomasia Maria D.S, 2015), social institutions, farmers and civil servants occupying Type III State House and the voyagers (Daniella Malute, 2012 & Fransisculs Manalo P.S, 2014) could also be granted land ownership rights from the State. However, existing Indonesian land laws

have not regulated the granting of land ownership rights to natural disaster survivors, including survivors of volcanic eruptions.

Hot and cold lava from the Mount Merapi eruption buried a number of villages in Sleman Regency, causing loss and damage to the inhabitants. Survivors were evacuated to safe areas. The local government provided land for survivors in relocation areas. The question is how did local wisdom influence Indonesian legal policy relating to the establishment of land ownership rights for survivors of the disaster.

2. Study at Mount Merapi Eruption

Mount Merapi, located in Sleman Regency, Yogyakarta Special Region, is the most active volcano in Indonesia. During the 19th century, there were approximately 20 eruptions, the largest occurring in 1872. Sleman Regency comprises 17 districts with a combined area of 57,482 hectares which represents 18 percent of the total area of Yogyakarta Special Region. Cangkringan District is the largest in Sleman Regency. Four districts in Sleman Regency namely Cangkringan, Pakem, Turi and Ngemplak are susceptible to disaster resulting from Mount Merapi eruptions. Cangkringan and Ngemplak are the largest and most vulnerable districts susceptible to eruptions from Mount Merapi.

The first eruption of Mount Merapi in 2010 occurred on October 26. The gas flow reached a distance of 7.5 kilometres from Mount Merapi's summit. Volcanic gas is the result of the most dangerous volcanic eruption, and can burn the skin and make it difficult to breathe. Forty people died and approximately 15,366 survivors were evacuated to shelters. On November 3, 2010, eruptions of volcanic gas continued for 1.5 hours, reaching 9 kilometres along the banks of the Gendol River. The safest area was outside the 15 kilometre exclusion zone. On November 5, 2010, Mount Merapi erupted, resulting in 222 deaths. The exclusion zone was extended to 20 kilometres.

Loss and damage occurred across many sectors following the eruption of Mount Merapi, including housing, infrastructure, social, the economy and cross-sectors. Hot and cold lava from the eruption buried a number of villages and destroyed thousands of houses in the Yogyakarta Special Region, rendering the residents homeless.

3. Local Wisdom on the slope of Mount Merapi, Sleman Regency, Yogyakarta Province

The meaning of value according to the Dictionary of Sociology and Related Sciences is the competence believed existing in something to satisfy a human. Thus the value, principally, is the trait or quality attached to an object (Kodhi and Soedjadi R, 1988). Value is in accordance with inner attitude, trends and physical wishes. Value is something to be pursued and achieved by everyone (Paulus Wahono, 1993). The value of someone is influenced by the person's background, i.e his or her culture. It also influences someone to get wisdom.

The values of the living on the slopes of Mount Merapi, Sleman Regency, have been influenced by Javanese values such as and as the five principles of Indonesia State and nation and *Pancasila*, the five principles of Indonesia nation and state, i.e generosity, collectivity, struggle, leadership, belief, cooperation and loyalty values. The Draft of the Yogyakarta Special Region Regulation on Culture determines several values such as environmentally friendly development (*hamemayu hayuning bawana*), the leader uniting with his people in the struggle against colonials, the human relationship with God as Creator (*golong gilig*), people should always remember the Almighty God (*sawiji*), all activities and interests in life should be aimed at the Almighty God (*greget*), belief towards personal competence to achieve your dreams (*sengguh*), never go backwards when facing problems (*ora mingkuh*), (Regulation Draft on Culture of Yogyakarta Special Region). These values are embedded in the souls of those living around Mount Merapi (Kaelan M.S., 2010). Pancasila means five principles or values, namely religious value, human value, the unity of Indonesia, democracy, and social welfare for the Indonesian people. The Governor of Yogyakarta Special Region, who is also the Sultan of Yogyakarta, suggests that humans or creators should adapt to nature instead of nature adapting to humans, in other words, “living in harmony”. These values have encouraged survivors living in the new settlements.

4. The Development of Temporary Settlement

The disaster management of Mount Merapi was conducted in three phases, namely Pre-Disaster, Emergency-Perceptive, and Post-Disaster. During the Post-disaster phase the public was involved. Disaster restoration was emphasized and several regulations were issued. One of the important regulation was, Regulation of the Head of the National Body of Disaster Management (BNPD) No 5 of 2011. Regulation of Head of BNPB No 5 of 2011 stipulates that the activity of housing rehabilitation and reconstruction is to be conducted by those people relocated from Disaster Susceptible Area (KRB) III using the Rekompak scheme, a community based restoration program for post-disaster rebuilding of houses following the Mount Merapi eruptions in 2010. The results expected from the program were:

- a. The establishment of community based reconstruction of housing and the environment;
- b. The establishment of housing and basic infrastructure in accordance with technical earthquake-resistant building requirements;
- c. A well-organized settlement environment appropriate to the conditions of disaster mitigation (Government of Sleman Regency, 2013)

The government of Sleman Regency evacuated survivors into safe shelters located in several villages. The basic needs of survivors, including food, clothing and shelter, were provided by the governments of Sleman Regency and Yogyakarta Special Region, the Central Government, and other parties in accordance with Article 1 of Regulation of Sleman Regency

No. 28 of 2010. The general public donated a large amount of basic needs to survivors of the disaster.

On November 22, 2010, the governments of Sleman Regency and Yogyakarta Special Region, and other parties including National Amil Zakat Institution (BAZNAS), Gadjah Mada University, TV One, Metro TV, Media Group and Jenggala commenced building shelters. A total of 365,820 m² of land was utilised, of which 251,800 m² was for housing and the remainder for public facilities. Each family occupied a shelter measuring 36 m², on 64 m² plot of land. 1137 units were built. Other construction included kindergarten school, pre-school, community hall, village head office, market, minaret, library, mosque, public toilet, and a house for garbage management.

Besides physical assistance, the survivors were also given financial aid, catfish seed, and several training. The government of Yogyakarta Special Region also provided 5,000 Rupiah and 400 grams of rice per person per day to each survivor. The government built barns close to the shelters for those survivors who still had cattle. Survivors started to look for jobs, which was difficult because they were mostly farmers. New jobs included duck husbandry, cow husbandry, sand mining, and lava tour guides. If possible, they occasionally went to their land.

5. Development of Permanent Settlement and Establishment of Land Ownership Right

The shelters were designed to last one year after which permanent settlements and houses would be developed using funds allocated through housing grants by the Rekompak program for relocation from KRB III to the safe areas, namely:

- a. Relocation by the government of Yogyakarta Special Region. The land in these areas belonged to related villages and was called village land. In these locations the survivors did not have personal/family land;
- b. Relocation conducted autonomously, i.e:
 - 1) Individual autonomy by those survivors who had personal/family land in the relocation area;
 - 2) Group autonomy where groups of survivors relocated to areas collectively selected by the survivors.

Survivors who relocated did so by consensus, united by cultural similarities, rule, trust and hope. Although in the groups there were fall outs and constraints, there was also consensus, not conflicts. Their values of local wisdom are cooperation, value, consensus, peace and social balance (Achmad Ali and Wiwie Heryani, 2012).

Steps through which Kepuharjo village land became the survivors land through land ownership rights:

- a. Yogyakarta Special Region Regional Disaster Management Agency (BPBD) proposed the Head of Kepuharjo village land for permanent settlement to the Kepuharjo village head on January 12, 2012;
- b. The Village Representative Body (BPD) of Kepuharjo village issued Decree No 01/KPTS.BPD/2012 on Agreement towards the Decree of Kepuharjo Village Head No 01/KPTS/KEP.DES/2012 on Land Extrication of Kepuharjo Village Land for Permanent Settlement. It was also decided in the letter that the village land was purchased by the Yogyakarta Special Region government and the budget received would be used to buy substitutive land by the village government;
- c. The Head of Kepuharjo village proposed deliverance to the Head of Sleman Regency on January 13, 2012, by enclosing the Decree of Head of Kepuharjo Village, the Decree of BPD Kepuharjo, the Letter of BPBD Yogyakarta Province and the Recommendation of Cangkringan District;
- d. The Head of Sleman Regency proposed the Extrication Permit of village land for permanent settlement to the Governor of Yogyakarta Special Province on February 8, 2012;
- e. The Regional Land Supervisory Body of Sleman Regency invited eight related key persons from the Yogyakarta Special Region, 10 related key persons from Sleman Regency and heads of related villages to discuss and determine the price of the village land which will be delivered;
- f. The Governor of Yogyakarta Special Region issued Decree No. II/IZ/2012 on Providing a Permit to Kepuharjo Village to Hand Over the Village Land to BPBD Yogyakarta Special Region for Permanent Settlement. The Decree also stated that the land was to be registered under the name of survivors.

The handing over of village land to survivors was in accordance with the Regulation of Governor of Yogyakarta Special Region No. 11 of 2012. Article 1 (6) stipulates that village land is land owned by the village government. Article 4 stipulates that village land is to be managed by the village government and is to be used to conduct government, development and service to the village. Article 11 stipulates that implementation of village land and providing substitutive land is to be conducted by the Committee of Extrication and the Committee of Providing Village Land. Article 13 (1) stipulates that village land is not permitted to be handed over to other parties except in the general interest. Article 13 (2) stipulates that one of the general interests is a general safety facility. Article 14 b stipulates that the party who can propose land extraction of village land is village government.

The implementation of granting ex Kepuharjo village land to survivors was as follows:

- a. Survivors were classified into groups of residents. Each group consisted of 10 to 15 family heads;

b. Each family head was given land measuring 150 m² i.e. 100 m² for the house and 50 m² for public and social facilities;

c. All family heads in each group worked cooperatively in building the houses. Each family received funds of 30 million rupiah for the house and was given a choice to determine the type of the house, minimum area of building is 36 m² or similar pattern and earthquake-resistant.

There were 2065 permanent houses, i.e. 1978 houses in Cangkringan District and 87 houses in Ngemplak District.

Based on the Decree of Governor of Yogyakarta Special Region No. II/12/2012, the survivors received land ownership rights. The land registered was funded by the 2012 National Agrarian Operational Project (PRONA) of Sleman Regency. Samun Ismaya (2013) notes that PRONA is the process of massive land certification, implementing the Four Order Program in the field of land which is conducted integrally and proposed to all level of societies in particularly to low income households. PRONA is regulated in the Decree of Minister of Home Affairs No. 189 of 1981. Land registration is regulated in Article 19 BAL, Government Regulation No. 24 of 1997 and Regulation of Agrarian State Minister/Head of National Land Body No. 3 of 1997. Article 1 point 1 Government Regulation No. 24 of 1997 stipulates that land registration is one of a series of activities continually conducted by the government to collect information or certain data concerning existing land in certain areas, processing, saving and its providing for the interest of society, in order to give legal certainty in the field of land use, including the issuance of its legal proof and maintenance.

As mentioned above, survivors building houses on ex village land legally owned the land and received the land certificates under their names but survivors building houses on his or her family's land have not gained certificates of land ownership rights because the right has not been divided yet among the heirs.

6. Conclusion

Indonesian land laws do not yet regulate establishing ownership rights for survivors of the eruptions or the protection of existing rights, however, in emergency situations such as the Mount Merapi eruption in Yogyakarta Special Region in October and November 2010, local wisdom has influenced the government's legal policy. Several local government legal policies were taken in relation to this issue. The temporary settlement or shelters were built and designed to last one year after which permanent settlements or houses developed using funds allocated through housing grants by the Rekompak program for relocation from KRB III to the safe areas. Relocation to related villages called village land for the survivors did not have personal/family land and relocation conducted autonomously for those who had personal/family land in the relocation area and groups to areas collectively selected by the survivors. The local government gave financial aid to each family to buy building materials

to build a house, village land and land certificates to survivors who did not have land in the areas those villagers had been relocated to, encouraged survivors who had land in the areas appointed by the local government to build houses on that land and provided them some money as compensation, supported the relocation of groups of villagers to areas where they would build their houses.

We need to understand that the successful solutions of one country are not simply transferable. In this case, local values or local wisdom need to be explored to create *Ius Constituendum* for Indonesia State.

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Decree of Minister of Home Affairs Number 189 of 1981

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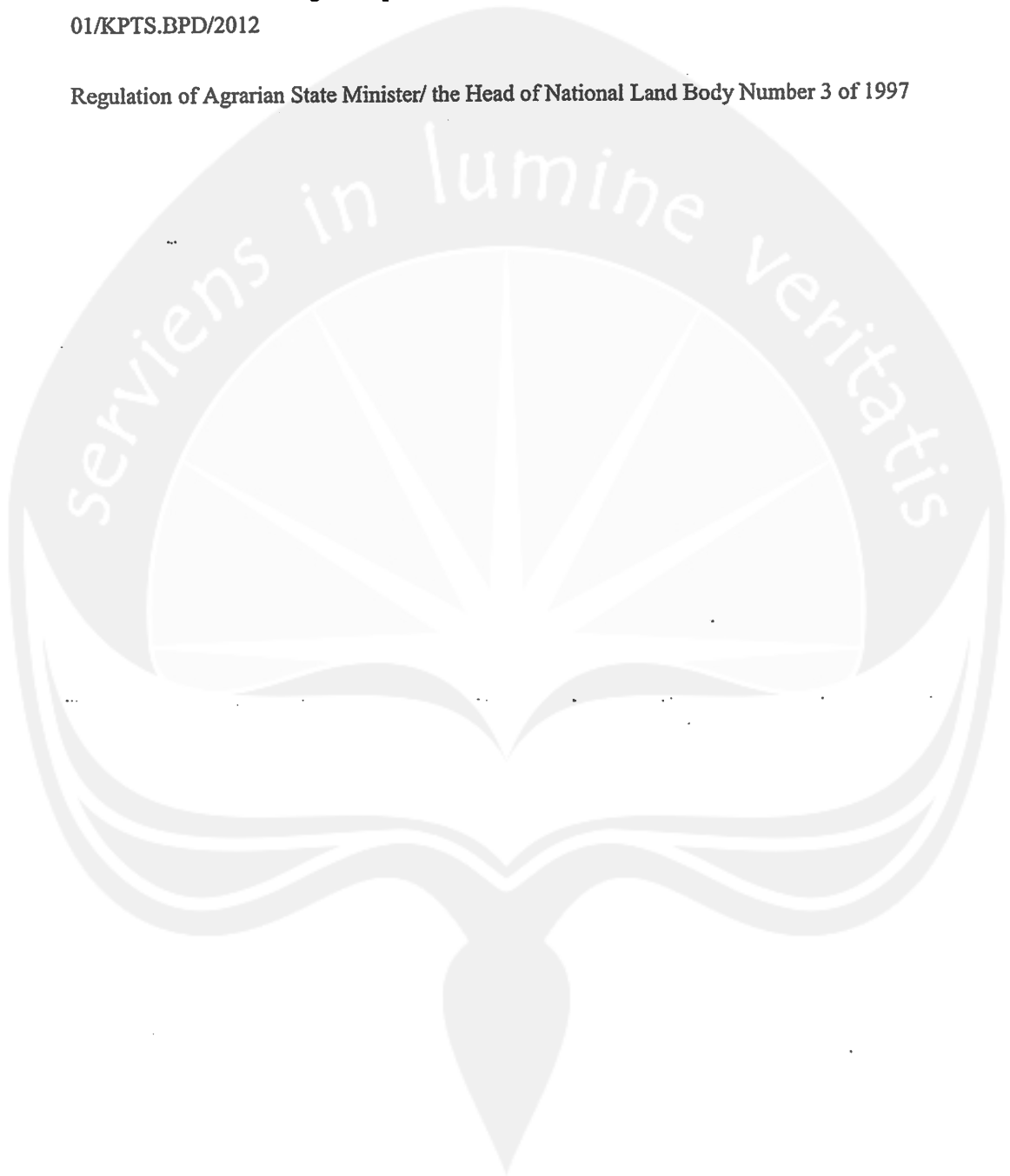
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Regulation of Sleman Regency Number 28 of 2010

Decree of the Head of Kepuharjo Village Number 01/KPTS.KEP.DES/2012

**Decree of the Village Representative Body of Kepuharjo Village Number
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**The Harmonious Convergence of Philanthropy and Capitalism as the Root
of Corporate Social Contribution**

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- I. Study Background and Goals**
- II. Historical Evolvement of Philanthropic Thought**
 - A. Origin and Definition**
 - B. The West**
 - 1. Stoicism
 - 2. Christianity
 - 3. Jean-Jacques Rousseau
 - 4. Alexis de Tocqueville
 - C. The East**
 - 1. Mòjiā
 - 2. Buddhism
 - 3. Rabīndranāth Tagore
 - 4. Mohandas Karamchand Gandhi
- III. Selected Case Studies of Successful Philanthropic Activities**
 - A. Aravind Eye Care Sysiem**
 - 1. Establishment and Present Conditions
 - 2. Aravind's Efforts to Make a Typhlosis-Free World
 - 3. Outcomes and Effects for Society
 - B. PATH**
 - 1. Establishment and Present Conditions
 - 2. PĀTH's Efforts to Promote Healthier Lives Worldwide
 - 3. Outcomes and Effects for Society
 - C. Grameen Bank**
 - 1. Establishment and Present Conditions
 - 2. Grameen's Efforts to Combat Global Poverty
 - 3. Outcomes and Effects for Society
 - D. KickStart International**
 - 1. Establishment and Present Conditions
 - 2. KickStart's Efforts toward a More Prosperous World
 - 3. Outcomes and Effects for Society
 - E. BRAC**
 - 1. Establishment and Present Conditions
 - 2. BRAC's Efforts for the Poor
 - 3. Outcomes and Effects for Society
- IV. Extraction of Harmonious Implications from the Conflicts between Philanthropy and Capitalism**
 - A. Importance of Understanding the Nature of Philanthropy**
 - B. Promoting Innovative Management Methods of Corporations in Non-profit Organizations**
 - C. Reflection of Philanthropy in Social Contribution Activities of**

Corporations

D. Implications and Importance of Philanthropy

V. Conclusions



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**Innovation of Democracy Reform Model under the Sovereign Governance
of Four Balancing State Powers in Thailand**

Suraphol Srivithaya | Rangsit University

**Innovation of Democracy Reform Model under the Sovereign Governance of
Four Balancing State Powers in Thailand**

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ABSTRACT

Before the Siamese revolution in 1932, the Supreme Council of State was established by H.M. King Prajadhipok (RAMA VII) in 1925 as holistic policy and legislative advisory council of all State affairs in order to well prepare carefully a peaceful transformation from the regime of absolute monarchy into constitutional monarchy. This Siamese monarch heritage of *Dharmaraja governance* has inspired and enlightened the researcher to study in searching for the renaissance of the Supreme Council of State as a new model of democracy reform innovation based upon the *sovereign governance* of balancing four pillars of State powers. Among many countries around the world, Thailand had long been faced with tremendous problems of representative democracy in the application of the British model of Westminster parliamentary system since 1932. As there are today at least four principal models of representative democracy: British parliamentary system, American presidential system, French semi-presidential system, and German applied parliamentary system. The purpose of this research therefore is to find out an innovation of the fifth model called "*Dhrammacracy semi-parliamentary system*", in which the separation of sovereign powers shall be based on balancing four State powers pillars: *sovereign governance of the Supreme Council of State*, legislative power of the Parliament, executive power of the Government, and judicial power of the Courts. This research applied thus a qualitative research methodology by documentary research and case study research methods for data collection and data analysis leading to the conclusion and recommendations of the research. The results of this research found that the innovation of democracy reform model of "*Dhrammacracy semi-parliamentary system*" shall be applied not only in Thailand, but also in any countries that faced with tremendous problems of majoritarian dictatorship of Parliament after the adoption of British model of

Westminster parliamentary system. This research paper is a part of research report entitled “*Thai Democracy Reform under the Framework of Draft Dhrammacracy Constitution*”, with the supporting fund of Research Institute of Rangsit University in Thailand.

Keywords: *Innovation, Democracy Reform Model, Sovereign Governance, Four Balancing State Powers*

1. INTRODUCTION

The Supreme Council of State was established by His Majesty King Prajadhipok of Siam (Rama VII) on 28 November 1925 as an advisory and legislative council that existed from 1925 to 1932. The Eton and Sandhurst educated Siamese monarch wished to create a council similar to a cabinet, where the most important government officials could meet to decide on all State affairs. The King Rama VII's heritage of *Dharmaraja governance* during the reign of absolute monarchy has inspired the author to study in researching for the renaissance of the Supreme Council of State as new model of democracy reform innovation based upon the *sovereign governance* of four balancing State powers. Among many countries around the world, Thailand had long been faced with tremendous problems of representative democracy in the application of the British model of Westminster parliamentary system since 1932.

The fusion of powers under the parliamentary system between the legislative power of the parliament, the executive power of the government, and the judicial power of the courts was leading to the regime of parliamentary majoritarian dictatorship that could not truly check and balance among the three State powers. It is necessary therefore to reform the structure of State powers under the semi-parliamentary system based on the separation of four powers, rather than Montesquieu's separation of three powers.

Under the King as sovereign Head of State, the sovereign powers shall be absolutely separated into four sovereign powers: both the representatives exercising legislative power of the parliament and the prime minister as head of government shall be directly elected from the people, whereas the judicial power of the courts shall be independent. The Supreme Council of State shall exercise its fourth sovereign governance power as balancing power to supervise the check and balance of the said three powers.

2. THE ROLES OF KING PRAJADHIPOK'S SUPREME COUNCIL OF STATE DURING THE REGIME OF ABSOLUTE MONARCHY

After only two day of King Prajadhipok's accession to the throne, the Supreme Council of State* was established on Saturday 28 November 1925, composing of 5 members of the Chakri Dynasty's princes who had held ministerial positions during the reigns of King Rama V and Rama VI (King Prajadhipok's father and elder brother) (Chanchai Rattanavibul, 2005: 161). The Councilors were Prince Bhanurangsi Savangwongse (Prince Banubandhu

Vongsevoradej), Prince Paripatra Sukhumbhand (Prince of Nakorn Sawan), Prince Narisara Nuvadtivongs, Prince Damrong Rajanubhab, Prince Kitiyakara Voralaksana (Prince of Chanthaburi).

Their integrity and competence were most highly trusted by the King and truly respected by the people that could help King Prajadhipok accomplishing the success of administration in the first period (Chaianant Samutvanich, 1976: 84). Despite the Supreme Council had released the absolute powers exercised by the King at the beginning, the civil servants and the people felt that the exercise of their powers was excessive and more influential over the King (Chongkhachan Suwanmanee, 2011: 1). However, the King did not think that the Supreme Council had exercised their powers over the King, but just only his advisors of State affairs.

During its existence the Supreme Council took many initiatives. For example, in 1929 the Council decided to cut public spending on the government including civil servant's pay and defense spending, an action which was one of the main justifications the Khana Ratsadon (the People's Party) gave for the Siamese Revolution of 1932. In addition, the Supreme Council filled many civil service and military positions with their own relatives, replacing many commoners appointed under King Vajiravudh (Rama VI), which also created discontent in the country. (Sombat Dhamrongtanyawongse, 2006). After the Great Depression Crisis of 1930, the Council increased taxes on the populace to try to stem the economic downturn the country faced after the British Empire, Siam's largest trading partner, abandoned the gold standard.

The most important action by the Supreme Council was then the rejection of King Prajadhipok's draft Constitution for the Kingdom of Siam in the early 1932, on the 150th anniversary of the House of Chakri and the foundation of Bangkok (Sonthi Taechanand, 2002). The constitution would have given the people their first parliament, with a popularly elected lower house and an expanded Supreme Council as an upper house (Chaowana Traimas, 2003: 393-416). A few months later the Khana Ratsadon staged a coup d'état that ended the absolutist monarchy and replaced it with a constitutional monarchy. The constitution in which they promulgated abrogated the many powers of the monarch and dissolved the Supreme Council (Chaianant Samutvanich, 1976); it exiled the influential Prince Paripatra Sukhumbhand for life.

The Supreme Council of State had played 3 utmost holistic roles as: 1) Monarch's supreme council of all State affairs that exercised independent power, 2) joint duty performance with other State organs cordially or individually, 3) each individual member's performance was

*The Supreme Council of State was not the only organ of government at the time. The King also had a Privy Council and a Council of Secretaries. However, the Supreme Council was regarded as the most important. Prince Paripatra was the most dominant member of the Supreme Council, since he was then heir to the throne and Minister of the Interior.

assured its independent status (Chanchai Rattanaivibul, 2005: 83-168). This model of the Supreme Council shall be therefore applied as innovation of the Supreme Council of State in the present constitutional monarchy of democratic regime in order to reform the sovereign State powers that shall be separated into four powers: legislative power of the parliament, executive power of the government, judicial power of the courts, and sovereign governance power of the Supreme Council of State, which shall be composed of 8 constitutional organs that control and supervise the absolute separation of powers among the first three powers. By this way, the Supreme Council shall act as independent power balancing and reviewing the first three powers not to abuse of power in their power exercise of duty performance in compliance with the rule of law under the constitution. (See details in point 4)

3. THE DHRAMMACRACY PRINCIPLES OF FOUR BALANCING STATE POWERS IN THE SEMI-PARLIAMENTARY SYSTEM

Apart from the reformation of King Prajadhipok's Supreme Council of State as innovative sovereign governance model, the Dhrammacracy principles of Buddhadasa Bhikkhu (พุทธทาสภิกขุ) shall be applied for controlling and supervising the exercise of four balancing state powers: sovereign governance power of the Supreme Council of State, legislative power of the parliament, executive power of the government, judicial power of the courts. The Dhrammacracy principles were based on the Buddhist Dharma in which Lord Buddha established three basic categories of sovereignty: *Attadhipateyya* is the supremacy of self and self-dependence; *Lokadhipateyya* is the supremacy of the world or public opinion; *Dhamadhipateyya* is the supremacy of the Dharma, the law of truth and righteousness, rule of the Dharma, rule of the true law (Phra Brahmagunabhorn, P.A. Payutto, 2010: 107). Dhrammacracy upholds therefore the supremacy of the rule of law and righteousness upon the exercise of four balancing state powers under the semi-parliamentary system. Buddhadasa Bhikkhu concluded that Dharma and politics cannot be separated, if separated the politics shall immediately destroyed the world (Buddhadasa Bhikkhu, 2006), and linked the Dhrammacracy with social democracy based on three principles: principle of common public interests and interdependence, principle of self-control and generosity, and principle of common respect and kindness.

4. COMPARATIVE ANALYSIS OF ORIGINAL MODELS OF DEMOCRACY REGIMES

There are nowadays at least four original models of representative democracy regimes in the world: parliamentary system of the United Kingdom, presidential system of the United States,

semi-presidential of France, and applied parliamentary system of Germany, that each country around the world shall applied appropriately within its different political and social contexts (Chaowana Trainas, 2003: 393-414). In 1912, Dr. Sun Yat Sen, father of Chinese revolution, established the Republic of China as the first democracy in Asia for more than hundred years. He had created an innovative democracy model of semi-presidential system under the five powers constitution (Economist Intelligence Unit, 2013). Taiwan had applied his democracy heritage and celebrated the 102th anniversary of five powers constitution last year.

The comparative analysis of four original models of democracy regimes are as follows:

4.1 *Parliamentary System* of the United Kingdom applied check and balance mechanism with the fusion of powers between legislative and executive under the supremacy of parliament;

4.2 *Presidential System* of the United States applied check and balance mechanism with the separation of powers between legislative and executive under the supremacy of constitution;

4.3 *Semi-Presidential System* of France applied check and balance mechanism with the separation of powers between legislative and executive under the supremacy of constitution;

4.4 *Applied Parliamentary System* of Germany applied check and balance mechanism with the fusion of powers between legislative and executive under the supremacy of constitution.

Apart from the above four original models, the five powers constitution of the Republic of China (Taiwan) has established an innovation of the democracy regime model. Under the Republic of China's Constitution on 25 December 1947 inspired by Sun Yat Sen's doctrine of democratic governance, the structure of supreme state powers was separated into five powers (yuans): legislative yuan, executive yuan, judicial yuan, examination yuan, and control yuan (Pridi Kasemsap, 1987: 164-167). Professor Dr. Borwonsak Uwanno, Secretary General of King Prajadhipok Institute, analyzed the separation of five powers structure under the Taiwanese constitution that "...all five powers in this constitution are independent authority of governance. If we applied the five powers constitution that each power shall be exercised independently in itself: the executive power exercised by the President, the legislative power by the Parliament, the judicial power by the Courts, and power of corruption suppression in the bureaucracy and examination power of civil servant recruitment were belonged to independent control yuan and examination yuan..." (Borwonsak Uwanno, 1995: 59)

Taiwan today was governed therefore under the structure of five powers separation, not the separation of three powers according to Montesquieu theory. The President as Head of State was directly elected by the people, shared power of executive yuan with the Prime Minister

who presided the executive yuan council (council of ministers). All executive organizations and subordinate departments were under the Prime Minister. The legislative yuan (Parliament) and the control yuan had their powers to check and control the administration of the executive yuan and the Prime Minister. The President as Head of State had the power to appoint and impeach high ranking officials of the executive yuan, judicial yuan, examination yuan and control yuan, as well as mediator of inter-yuans conflicts of powers and special power in case of emergency situation because he was the President of National Security Council.

5. DEMOCRACY REFORM MECHANISM UNDER THE FOUR SOVEREIGN POWERS

The Dhrammacracy is a democratic regime established by the legal state under the moral rule of law that upholds the principle of righteousness. In the Dhrammacracy society, the State shall adopt a semi-parliamentary system under the supremacy of the constitution that serves as social contract to regulate the separation of powers into four State powers: sovereign governance, legislative power, executive power, and judicial power. The Supreme Council of State shall be therefore established to exercise the fourth sovereign power as sovereign governance through its independent constitutional organs in order to check and balance the legislative power of the parliament, the executive power of the government, and the judicial power of the courts.

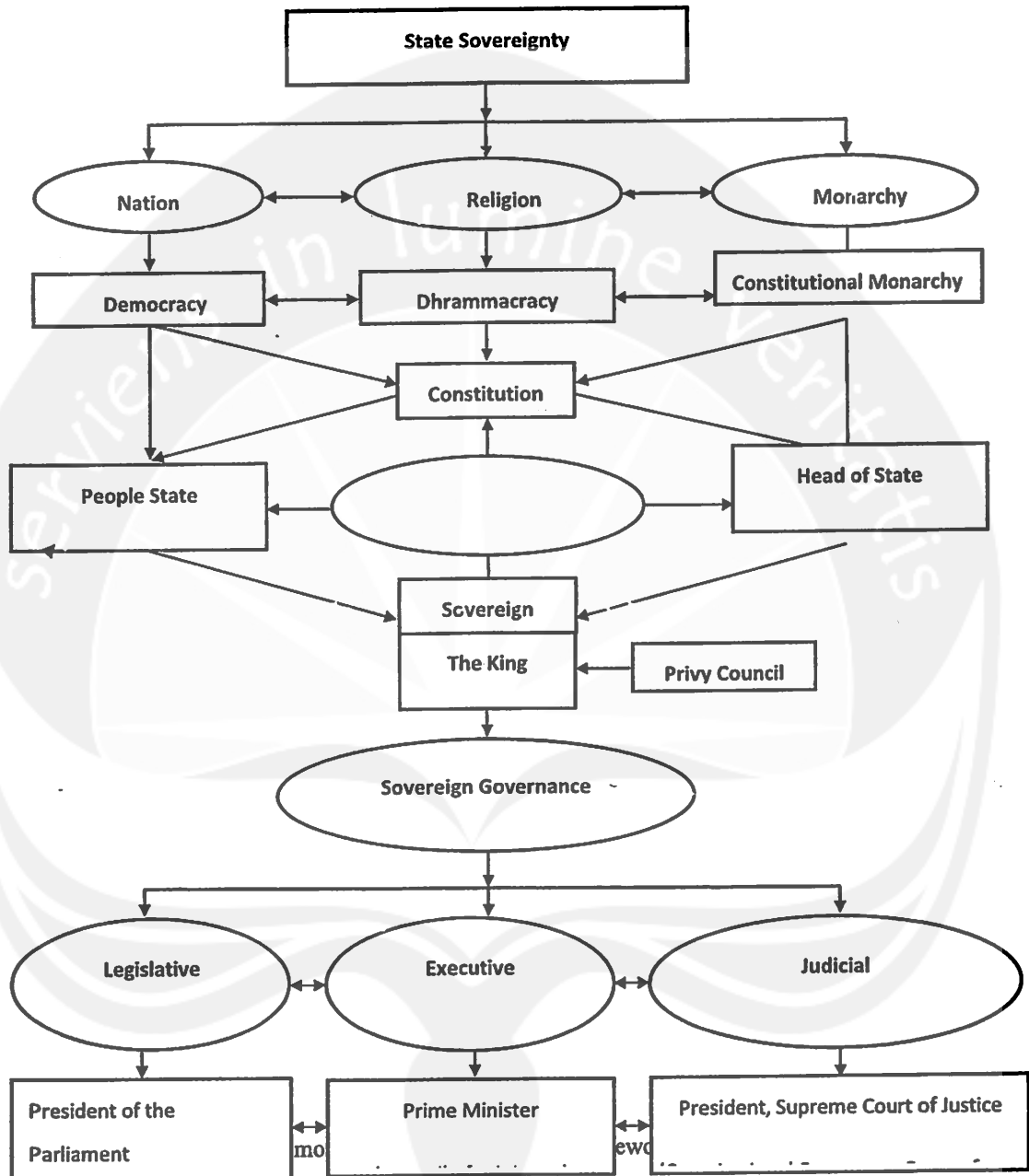
The democracy in Thailand now has to be reformed its structure of State powers under the Dhrammacracy semi-parliamentary system. The State sovereignty belongs to Thai people. The King as Head of State shall exercise sovereignty through the separation of four powers: through the sovereign governance of the Supreme Council of State, the legislative power of the Parliament, the executive power of the Government and the judicial power of the Courts.

5.1 *The State sovereignty* belongs to the Thai people emanated from three basic national institutions: nation, religion and monarchy. The nation is the origin of Democracy by the people governance; all religion in Thailand is the origin of Dhrammacracy; and the King is the origin of monarchy who reigns, not governs, by royal governance under the constitution as Dharmaraja under the *rule of Dhosapit Rajadharma*. His Majesty King Bhumibol Adulyadej (Rama IX) declared on his royal coronation ceremony that “I will rule the land *righteously* for the benefit and happiness of the Siamese people” that shall be considered as a recognition and commitment of the King as Head of State to the moral rule of law under the Dhrammacracy governance.

5.2 *The King* is the Head of State, who is a sovereign, enthroned in the position of revered worship and shall not be violated according to the principle of State immunity. The

State sovereignty that originally belongs to the King transcendently handed down to the Thai people by the principle of *rajprachasamasai* (the King and the people interdependent governance of the State affairs) (Pramoj Nakornthap, 2010).

5.3 *Political Institutions* are State organs that exercise the four sovereign powers under and on behalf of the King and Thai people: sovereign governance, legislative power, executive power, and judicial power. The King as Head of State shall exercise sovereign governance power through the Supreme Council of State; legislative power through the Parliament; executive power through the Government and the Prime Minister as Head of Government, and judicial power to the Courts. All State powers shall be exercised by the four political institutions, as well as all constitutional organs and State agencies. The performance of their respective State organs duties shall be in compliance with the rule of law and the constitution, as shown in Figure 1.



From the figure 1 the political institution shall exercise four sovereign powers as follows:

1) *The Supreme Council of State* is the holistic policy of all State affairs and highest national institution, having sovereign governance power to check and balance the exercising of legislative, executive, and judicial powers of the parliament, government, and courts respectively in order to protect the rule of law, democracy, and human rights. With the Royal Command countersigned by President of the Privy Council, the King shall appoint 45 members of the Supreme Council of State deriving from 23 representatives of the Parliament, the Government, the Courts and all independent constitutional organs in the central administration; and from the 22 representatives of the regional and local administration, as well as President of the Supreme Council of State elected by absolute majority of its attendant members as *Head of Sovereign Governance*. The President of the Supreme Council shall resign from his existing position before appointing by the Royal Command. (See details of the Supreme Council of State in point 6)

2) *The Parliament* is the highest legislative institution consisting of the Senate and the House of Representatives. With the Royal Command countersigned by President of the Supreme Council of State, the King appoints the President of the Parliament elected by absolute majority of its attendant members in the two houses as *Head of Legislative Power*. Both President of the Senate and House of Representative shall be Vice-Presidents of the Parliament. The Parliament is empowered to enact all legislation and to check and balance the exercising of executive power of the Government and the Prime Minister. All of its members shall not be appointed in the Government and other States organs. At least 1/10 of its parliamentary members shall submit a non-confident motion of general debate against the Prime Minister and the Council of Ministers.

(a) *The Senate* is composed of 250 members of national representation to be directly elected by the people. In the 1st round, 750 candidates shall be directly elected by five groups of public and private associations registered by the Election Commission. In the 2nd round, 750 candidates shall be directly elected at the national constituency by one man one vote of the people. The vote ranking of 1-250 candidates shall be elected as members of the Senate. All the candidates of the Senate election shall not be the members of any political parties.

(b) *The House of Representatives* are composed of 450 members of citizen representation to be directly elected by the people. The candidate shall or shall not be a member of any political parties. The general election shall run in the provincial constituency by one man one vote of the people. The candidate who gets absolute majority votes shall win in the 1st round. The 2nd round shall be run for the candidate who did not get absolute majority votes in the 1st round.

3) *The Government* shall be composed of the Prime Minister and Council of Ministers.

(a) *The Prime Ministers*. With the Royal Command countersigned by the President of the Supreme Council of States, the King appoints the Prime Ministers as *Head of Government*, who shall be directly elected at the national constituency by one man one vote

of the people. The candidate who gets absolute majority votes shall win in the 1st round. In case of no winner in the 1st round, the first two high-ranking candidates shall be run in the 2nd round in order to get absolute majority vote winner. All candidates for the Prime Minister Election shall not be the members of any political parties. The mandate of the Prime Minister shall be four years with only two terms consecutively. The Prime Minister shall have the power to dissolve the Parliament.

(b) *The Council of Ministers* is composed of the Prime Minister and other 35 ministers who shall be selected by the Prime Minister and shall not be members of the Parliament and any political parties, the Courts, or any independent constitutional organs and others State organs. With the Royal Command countersigned by the Prime Minister, the King appoints all Council of Minister members. The Council of Ministers shall perform with collective responsibility in the administration of State affairs and shall be voted by non-confident motion of the Parliament.

4) *The Courts* shall be composed of the Supreme Court of Justice, the High Court of Justice, the Constitutional Court, the Administrative Court, and the Military Court. With the Royal Command countersigned by President of the Supreme Council of State, the King appoints the President of the Supreme Court of Justice, who was elected by absolute majority of general assembly of all five courts members as *Head of Judicial Power* and his mandate shall be four years with only two terms consecutively.

6. THE SUPREME COUNCIL OF STATE UNDER THE FOUR SOVEREIGN POWERS

6.1 *The Formation of the Supreme Council of State* is the most vital innovation of democracy reform model under the four sovereign powers. The Supreme Council shall exercise its sovereign governance power to act as guardian of rule of law, democracy regime, and human rights as guaranteed by the constitution. By this way, the Supreme Council shall have sovereign governance power to check and balance the exercising of Parliament's legislative power, Government's executive power, and Courts' judicial power, in their duty performance under the rule of law, not to violate the rights and liberties of the people as guaranteed by the constitution.

6.2 *The Structure and Composition of the Supreme Council of State.* With the Royal Command countersigned by President of the Privy Council, the King appoints 45 members of the Supreme Council of State deriving from two groups of representation: (1) 23 supreme counselors shall be represented the central administration by 5 members of the Parliament (President of the Parliament, President/Vice President of Senate & House of Representative, Head of Opposition Party); 5 members of the Government (Prime Minister and 4 Deputy Prime Ministers), 5 members of the Courts (Presidents: Supreme Court of Justice, High Court, Constitutional Court, Administrative Court and Military

Court), and 8 members of independent constitutional organs (Presidents of National Security Council, National Economic and Social Council, Election Commission, National Human Rights Commission, Ombudsman, National Counter Corruption Commission, State Audit Commission, and National Public Functionaries Commission. (2) 22 supreme counselors shall be represented the regional and local administration by 7 Regional Administration Inspectors, and 15 Governors of Provincial Municipality.

6.3 *The Power of the Supreme Council of State* shall be derived from the sovereign governance to check and balance the legislative, executive, judicial powers that composes of 4 *general authorities*: election authority, selection authority, examination authority, supervision authority; 2 *special authorities*: balancer authority and mediator authority, as shown in Figure 2.

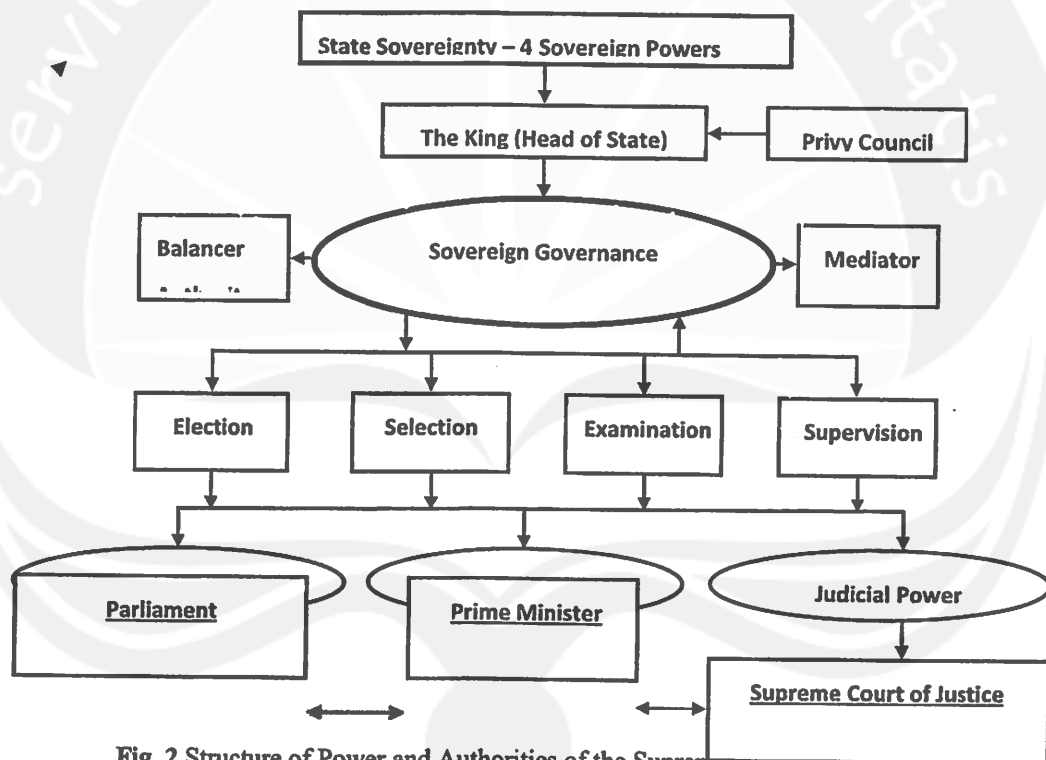


Fig. 2 Structure of Power and Authorities of the Supreme Council of State

From the figure 2, the Supreme Council of State shall exercise its sovereign governance power through 8 independent constitutional organs: *election authority* for organizing all general and local elections and referendum through the Election Commission; *selection authority* for recruiting members of 8 independent constitutional organs, through the National Public Functionaries Commission; *examination authority* for recruiting all public servants and other State officers through the National Public Functionaries Commission; *supervision*

authority for the protection of human rights through the National Human Rights Commission; for the protection of rights and liberties of the people through the Ombudsman; for the prevention and suppression of corruption through the National Counter Corruption Commission and the State Audit Commission; for *balancer authority* through all independent constitutional organs; and for *mediator authority* through the National Security Council and the National Economic and Social Council and other constitutional organs concerned. The Supreme Council of State shall thus play important roles and functions in the protection of the rule of law, democracy regime, and human rights, as well as rights and liberties of the people.

7. CONCLUSION AND RECOMMENDATION

From the above analysis of the results of research, the researcher concluded that the establishment of the Supreme Council of State shall be an innovation of the mechanism of State powers structure of democracy reform in Thailand under the *draft Dhrammacracy Constitution* in the near future. The mechanism of four sovereign powers of State shall commence a new peaceful revolution for new democracy in Thailand after facing with successive political turmoil and constitutional crisis from the Black May Crisis in 1992 until two failures of political reform by the coup d'état of 2006 and 2014. According to the spirit of His Majesty King Prajadhipok (Rama VII) and Professor Dr. Pridi Panomyong, a civilian fraction leader of Khana Rasadon (Peoples' Party) and Senior Statesman, the 1932 Siamese Revolution which changed the system of government in Siam from an absolute monarchy to a constitutional monarchy shall establish new regime of complete democracy. However, Thailand had never achieved to implement a true democracy according to the spirit of King Prachadhipok - Pridi Panomyong more than 80 years. The researcher recommends therefore that the innovation of the Supreme Council of State mechanism under the draft Dhrammacracy Constitution shall change Thai political system from an existing parliamentary majoritarian dictatorship to an absolute democracy under constitutional monarchy or the democratic regime of government with the King as Head of State. To this end, we can hope that Thailand shall establish and put an end of struggle for dictatorship power of fake democracy in order to build the *Dhrammacracy society* for the protection of the rule of law, human rights, and absolute true democracy in Thai political system.

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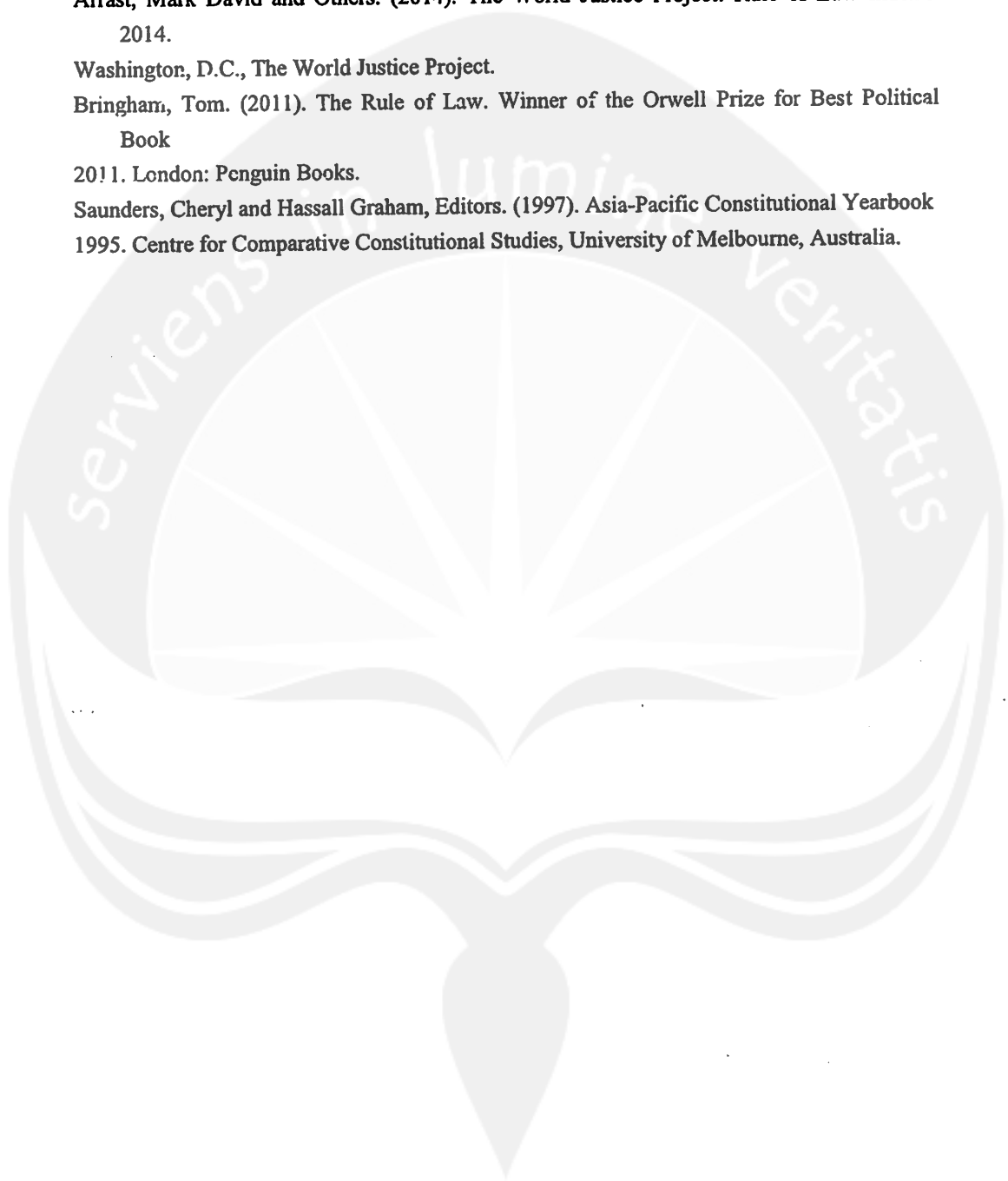
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Mare Nostrum on the International Law of the Sea

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Abstract

This research aims for study the development of the concept of international law of the sea, from the past to conform to the current. From the concept of the law of the sea of individuals various rules of social in each of the age and idea development to balancing the marine utilization in the current era. The process of research to define theory as a problem and define objectives which led to the main finding of the problem and start the process of finding a solution which process is study for essence And the process is to define the, after the process is finished, all data must be validated as conforming to policies of individual That is the summary in a new era for freedom of the sea concept, this is built on freedom of expression and authority, among all States. Under the terms of international law for every country can have the freedom to take advantage of the sea, as long as their done without conflict each another State: as far as international law as well as all States together to check the required respect, based on the base binding is customary international law. a feature is "Mare Nostrum". This is initial principle descend. This principle has been shown by the Romans at sea mentioned that "Mare Nostrum (our sea)" if considered from the wells was born (Sources) of the Romans had deployment to match the era then it can provide meaning, so even if the law of the sea is an international law that annulled freedom of use and seek benefits in accordance with national and international law will give, but they must not forget another factor. That makes the Government the need to follow "Common Interest" Which is task where those States are required to maintain the benefits together. In the international cooperation in various aspects as well as the benefits to those States as well as the world community; such as in the establishment of the various international organizations to assist the world community. Both in terms of the fishing boat resources Labor. Telecommunications, science, culture, and stability always fairly and be equitable

Keywords : The international Law of the Sea, the states, Politics, Era, Mare Nostrum.

I. OBJECTIVES OF RESEARCH

We have been informed about the definitions of the word Mare Nostrum in the Law of the seas from the history of the customary International Law. It runs from the era and be able to know exactly what the Mare Nostrum. And learn the problems and obstacles in choice of methods to measures about political system, the International Law of the Sea. Study political affairs of international norms, which will vary according to the values of human beings. It proposes the suggestions for development about maritime societies systems which maybe develop this study to become of the maritime world poicies in the future.

II. METHOD

A. *The International Law of the Seas Society*

The relationship between the countries is related to the behavior of human beings in the widest level of society is an international society and societies are 2 important features that's;

1. Member's the exact state of the boundary.
2. The international community is anarchy.

We can say that the state is the individual an enlarged of it. And the relationship between the states, there will be conflict. In addition to this, the state is still there, but distrust and aimed to maintain the survival of the national interests and the concept of "ThomasHobbers" about on the state of nature is rooted in human nature to look on the negative side.

By system structures realisin with elements are;

1. Structure of the State and behavior influence the attention to
2. The international system that is anarchy, including the
3. The distribution of power in the system
4. The impact of the international system on the behavior of individual State in the world community³.

International law and to performance of the states , when the states to respect and performed by law and go to be together with the benefit between states, Therefore, the current war in the 18th century intellectual light at a major European base leading up to birth the Liberalism⁴

From the suspicious foundation at the beginning to protect the rights of individuals meets the democratic legislation.

³Jack Donnelly, "The Ethics of Realism", in Christian Reus-Smit, Duncan Snidal (eds.), *The Oxford Handbook of International Relations*, Oxford University Press, 2008, p. 150

⁴ Liberalism is political views to dispose freedom and equality of individual is the important goal. Concept liberalism believes by human basics isn't bad man but human is animal for reason so cooperation, economy, politics include the international freedom is the possible thing. The liberal believes the international relationship is story of seeking depend on together more than seeking power stability so that is provenance of founding institution together and convention. The international guidelines order to keep the international peace.

The state should act to provide education as civil and good governance. The concept of liberalism gradually created in the Administration as a link.

2 component parts together;

1. The State that is strong enough to overcome global anarchy.
2. To recognize the power within the State to be enrolling to protect the rights of individuals, as well as the public that the system checks, trying to help prop up the State's independence.

The importance to the interaction between the same profound attention towards plural society⁵ and interaction between groups by saying that the Group's assistance in society until it eventually will lead to the occurrence of civil society. Which is often group that arise from having common interests to exchange, but the interest joined in other subjects may be generating group, more communication because the needs of citizens is a principle. Advances in transportation had facilitated for demand's people. The State which is the institution (Institutionalization) that functions are fulfilled the demand of citizens that are more, the State's main role in the political world, institute of Political action unit was individual, it's apparent that people are understanding of the politics world will be aimed the interesting point at individual.

Which liberalism in statute had concept about liberty 4 kinds are:

1. Liberty of oppression
2. Liberty of participation
3. Liberty of conscience and belief
4. Liberty of success own and Zero-Sum Game concept's if other faction got a part, but our faction lose that part too like Win-Win situation's all factions have opportunity to benefit together like Non-zero-sum Orientation. Individual attempted to learn for executing efficiency and effect by to exchange benefit together in quality of face to face or group.

Summary 2 reasons that's;

Non-State actors play an important role in the political world has power. Scientist, Benefit group has influence and other in corporations, Government organization and they work together with government.

The State is actor within the State. In addition, within the State consists of several different actors according to advantage.

Where the effects has even not necessary to be effect in symmetric or quality so that depend on together between developed countries and developing countries have to consider at mutual benefit is to consider that join gains or join losses, by hypothesis 3 reasons:

⁵ Definition of the "Plural society" is diversity of congregation and culture such as diversity of human group, class, career, ideal, way of life different diversity of people in the states.

State is stable organization and as outstanding actor in international politics.

Power is benefit thing and as efficiency appliance in implementation.

Hierarchy in politics international, but the point at issue in politics worldwide had several points unable certain priority. The important point is politics international, sometime many channels communication had been communicated by state or society will contact each other in both informal styles, so that means communication through multinational companies and international organization, and these channels had been exchanging politics, Do not use the contact between the State per State only ever occur the same in international relations, by today's the day of intellectual freedom and concept for benefit of responding demand's population's state.

We could see from concept that the flag where the power up by The Monopoly Flag⁶ that is whether England's ships sailed to where, the area was belong king of England. In 1604 Dutch international advocator Hugo de GROOT⁷ at that moment he was working on legal advisor for Dutch East India Company had wrote the important book called "De Indis" and conception of "Mare Liberum⁸". In 1635 King Charles I of British was an attempt to preserve the interests of the countries, so ordered the English international lawyer John Selden⁹ had disputed principal of Mare Liberum's Hugo de GROOT by wrote a book called "Mare Clausum (closed sea)¹⁰" that meant the sea's able dominate , This idea was made conflicted with the Mare Liberum completely.

B. The role of the International Law of The Sea.

National role. In this section, a person who has a national role is President Truman (Harry S. Truman) of the United States. In the Declaration of possession of coastal resources under the sea which is continental shelf. From this time, notice the influence resulted in a meeting at

⁶MallikaPinitjun. "THE INTERNATIONAL LAW OF THE SEA." Ramkhamhaeng University , 1992 p.41

⁷Hugo Grotius (10 April 1583 – 28 August 1645), also known as Huig de Groot, Hugo Grocio or Hugo de Groot was a jurist in the Dutch Republic. In 1609, Grotius wrote one of the most important international legal doctrines regarding the seas and oceans – Mare Liberum, a Latin title that translates to "the freedom of the seas". It is said to be "the first, and classic, exposition of the doctrine of the freedom of the seas" which has been the essence and backbone of the modern law of the sea. It is generally assumed that Grotius first propounded the principle of freedom of the seas.

⁸The Free Sea (Mare Liberum, published 1609) Grotius formulated the new principle that the sea was international territory and all nations were free to use it for seafaring trade. Grotius, by claiming 'free seas' (Freedom of the seas), provided suitable ideological justification for the Dutch breaking up of various trade monopolies through its formidable naval power (and then establishing its own monopoly)

⁹John Selden (16 December 1584 – 30 November 1654) was an English jurist and a scholar of England's ancient laws and constitution. He had been written sixteen or seventeen years before, but James I had prohibited its publication for political reasons; hence it appeared a quarter of a century after Grotius's The Free Sea (Mare liberum), to which it was intended to be a rejoinder, and the pretensions advanced in which on behalf of the Dutch fishermen to poach in the waters off the English coasts, it was its purpose to explode.

¹⁰ Closed sea is a term used in international law to mention a sea, ocean or other navigable body of water under the jurisdiction of a state that is closed or not accessible to other states. Mare clausum is an exception to mare liberum (Latin for "free sea"), meaning a sea that is open to navigation to ships of all nations

Geneva¹¹ in the year 1958 by said that this was causing a proposal by split-screen terminals, a chest, the power 3 United States party faction opposing the Soviet Union and emerging economies to various claims, but claims this time back to emerging economies to play a major role. That affects the United Nations Conference on the law of the Sea 1982. The meeting, which continued from the meeting at Geneva in 1958 year.

The role of high level nation From the United Nations Conference on the Law of the Sea, 3rd in 1982. This time made the organization occurs in both a matter of compromise between countries that are members such as WTO¹², IMO¹³, IHO¹⁴ The next section is member organization over the next section, that is, most countries in the world as a member of the UNSC, another regional organization is the split point features based on the objective of economic. Society and politics.

A multinational corporation is an international legal entity. To aim in the pursuit and utilization of natural resources on behalf of the multinational corporation. This is also executed in transport. The processes in the production and marketing of mineral discoveries from the area.

C. Political system, the International Law of the Sea

The many terminals, as though a multiple-pole power, as they like to negotiate to achieve win-win in every department. Without a country where more than one country, featured. The group of Latin America at the United Nations Conference on the Law of the Sea, 3rd in 1982. That were a disadvantage in economic matters, continental shelf so United States was cut off from the group. Two-pole systems are the integration with the power pole just two groups, a meeting was held at Geneva in 1958 the power role that the Soviet Union and America by trying to make the third world countries cannot included with the official party of the competitor.

¹¹ In 1956, the United Nations held its first Conference on the Law of the Sea (UNCLOS I) at Geneva, Switzerland.

UNCLOS I resulted in four treaties concluded in 1958:

Convention on the Territorial sea and Contiguous Zone, entry into force: 10 September 1964

Convention on the Continental Shelf, entry into force: 10 June 1964

Convention on the High Seas, entry into force: 30 September 1966

Convention on the fishing and Conservation of Living Resources of the high seas, entry into force: 20 March 1966

Although UNCLOS I was considered a success, it left open the important issue of breadth of territorial waters.

¹² WTO (World Trade Organization) had been the international organization, affiliation of UN acts relating to trade agreement between nations. That is forum for negotiation agreed and eliminate the conflict in condition and trade rules and international service member.

¹³ IMO International Maritime Organization

¹⁴ IHO International Hydrographs Organization is the government organization to as agents of community hydrographs. The situation where the United Nations says it is unlikely police authority has been to accept in hydrographs survey and sea charts. When talking about create a chart and sea hydrographs in the UN convention and similar instruments is standard and the IHO requirements apply as usual.

Single pole system is the way that there is only one party power support. This system is ideal for work, which in fact occurred, it is difficult.

Three -pole or three strategic pillars as checks are set aside to reduce and help to end violence. In the case of the United Nations Conference on the Law of the Sea in 1982, the third world countries with a third group came to balance between the Soviet Union and America. That if the third world countries lost it might cause war between two superpower Nations.

D. Power distribution system

Here is a power distribution kind of Top To Down or from the bottom to the top, distributing the powers of international organizations in various parts of the Organization, relationships and expertise in the matter comes down to the relationships of the various Member States. This also includes the appropriation of resources. Military cooperation Industrial capabilities, such as undersea mining and population.

E. Norm

The International Law system also had the basis of the norms of values and guidelines between together. In addition, Sovereignty also means any country has liberty to define the rules of the internal political affairs of international norms, which will vary according to the values of human beings.

F. The principles of "Mare Nostrum"

Although marine law is international law have development from tradition practice that became trend be law in writing, convention. However, It is avoid no discussed to concept for marine law.

G. Res Communis¹⁵

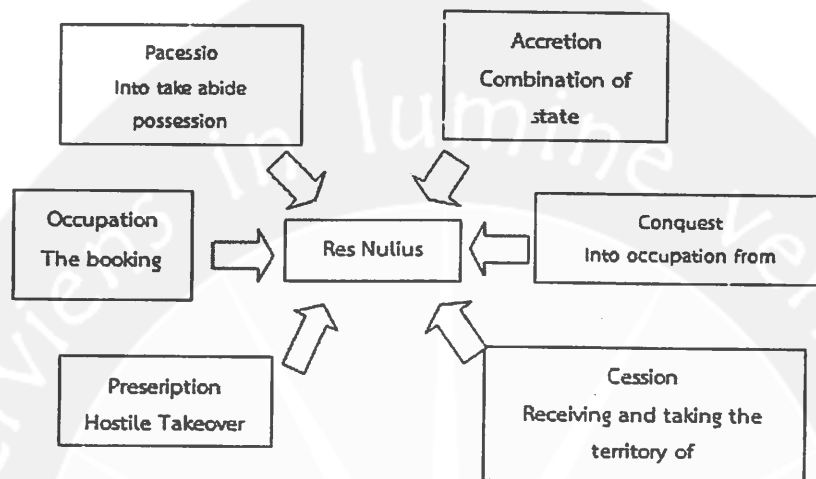
The first concept appears to claim in apply marine by the King Justinian had decided to digest have main "Mare quod nature omnibus patent" is rights of nature the sea is for everyone, no one owns and this from concept is consistent with concept of nature law bureau for comment is law have originally from nature enforce unlimited for time and place. Human are just found law and created by law of state can't opposed to nature law.

H. Res Nullius¹⁶ The concept of Marcianus¹⁷ at the same era with the King Justinian get recorded in code of law Justinian "Maris Commune usum omnibus" is sea and sea coast no

¹⁵ Considered property, so anyone will be upheld but not occupy public shared property of all mankind.

¹⁶ No property owner. If someone has come into the presence first that who is the first taker.

owner if someone has come into the presence first that who is owner this from concept that show Marcianus concept biased to laws bureau But he himself for also the weight of the law natural because that era is era of theism¹⁸ so not avoid say to Laws of nature.



I.MareLiberum

From the evolution of the natural laws of the method an idea about international law was established in the 16th century by Hugo de GROOT to comment "The sea is public for all the Nations in order to sail travel back and forth" from phrase aforementioned is acceptance a influence from bureau law nature is important in develop concept of international law especially "Customary international" if cause true from the ship Santa Catarina, which includes Portugal nationality is imprison on the Dutch East India¹⁹ company East India which glorious period of kingdom Portugal and Spain so this freedom of the sea which glorious period of Kingdom, Portugal and Spain so this freedom of the sea can be considered as a starting point of concept marine law in international law branch for to freedom of all states equally in social.

*J.MareClausum*²⁰

¹⁷ The text of the jurist Marcianus, preserved in the Digest of Justinian is the first formal pronouncement in recorded legal theory on the legal status of the sea and on the right of men to use the sea and its products. It is stated that the sea and its coasts are common to all men.

¹⁸ The meaning refers to the belief that a God or gods that there is God.

¹⁹ Most commercial era is The establishment of a Dutch East India company (Dutch East India or name in Dutch is United Dutch Chartered East India Company or VOC) up to March 20, 1602. At Amsterdam city (Amsterdam) by States-General of Netherlands (States-General of the Netherlands)

²⁰ This term used in international law to mention a sea, ocean or other navigable body of water under the jurisdiction of a state that is closed or not accessible to other states. *Mare clausum* is an exception to *mare liberum* (Latin for "free sea"),

The concept of the law of the Sea Convention relating to the international one another that occurred after the turn "Mare Liberum" of Truitt's for 24 years (John Selden) by main concept is sea can be occupied occupying the same land by concept of Selden has political factors policy of state come with concept is era of Selden. The UK is moving out of the maritime superpower Portugal and Spain replaced. By these concepts compared the concept of territory, they appreciated. Territorialists and that influence can pilot the land subsequently Positivism.

K. Common Heritage of Mankind²¹

Although, international social had been varied as era of international relationship resulting have affect cause the other new concepts of marine.

To seek to benefit from the sea of each the state, in present from integration of the various states in status of the international social that made the both old concepts at the Customary Law of the sea bounded together according the criteria and justification in the form of the United Nations Convention on how to share benefits, which the Law of the Sea were 2 copies, whether they was liberty of the sea in the other sides and to seek the benefit of the other states in form of the sovereignty or sovereign rights

And the proposal of Professor Arvidpardo's in the story "the treasure of humanity" proposals at beginning had focused on the management and the generosity benefit in resources the sea available for only the states. But the activity of the sea in this current era different from the previous generation. In particular, the other States and the archipelagic along with intent (Will) bounding as the International Law in form of "the International Organization" In the same way as to what is correct and should be adhered to, regardless of whether it is a morality (Moral) or international social norms, as though all the State bodies will have different concepts, but the action between the state per state together will cause adaptation and integration to achieve stability in order to achieve goals. Under the rules of the international organization, created as a "benefit-sharing" (Common Interest) of sea (Mare Nostrum)

meaning a sea that is open to navigation to ships of all nations

²¹ The principle of the international law which holds that defined territorial seas and elements of humanity's common heritage (cultural and natural) should be held in trust for future generations and be protected from exploitation by individual nation states or corporations.

L. Maps of Mare Nostrum System

Coastal states			United Nation
A	G	I	G
L	I		
A	G		
L	L	L	G
A	G		
L	L		

Landlocked states

A = Adaptation

G = Goal Attainment

I = Integration

L = Latency



= Coastal states



= The archipelagic States



= Landlocked states



= United Nation

In a new era liberty of the sea, which's power and liberty of all states, under the terms of international law, that is, every country can have the freedom to take advantage of the sea, as long as that does not conflict with another State what International Law stipulated for every states had to respect binding base what International Customary Law. Another principle's Mare Nostrum, that is at first this principle had been appeared by Romans said about sea "Mare Nostrum (the sea is ours)" provide that considered form sources of Romans in the beginning and brought applied with time, then it can provide meaning as although the Law of the Sea is International Law made liberty in using and find the benefit as intention of International Law, but that must not forget other factors that makes the State must follow is "mutual benefit or Common Interest", which is other states had to protect benefit and act on together, in International cooperation form in other sides by supporting to other states for global community.

III. DATA ANALYSIS

A. The System using advantage of marine international

Conception about nation center – attendants and Theory of Dependency, after World War II, Beginning from Raul Prebisch²², the Argentine economist (or called that's the Neo-Marxist group), he's the secretary of the UN Economic Commission for Latin America-ECLA, Prebisch had divided development's countries in the world 2 classes are 1. Nation center such the developed countries 2. Nation periphery means least developed countries. Prebisch explained cause of least developed countries in third world to be cause inequality economic relations between center and periphery.

B. Theory of Dependency was contained by important concepts such as

1. Institution had depended on Andre Gunder Frank's concept or called that Development trend of development. The foreign capitalists involved social class structures, in the position whose role in developing the countries because he seen state or the foreign capitalists as above yet not be strong enough, just be who protect the advantage for foreign only.

2. The new dependencies concept Third world countries have the underdeveloped because in the dependence Center country, a dependent variable is changed by the passage of time.

3. Developed in conjunction with dependencies, this feature dependency by Fernando H. Cordoso. that dependencies does not can lead to development always because development and dependency don't take to underdeveloped always because development and dependency may be happened concurrently which depend on role of state structures of relationship of the other groups within country more than changing of global capitalism.

System- level-Analysis, take advantage marine has to take top-down method. Nature of using marine and acting of international system such as.

Which state's actor in system per the distribution of power resources to define behavioral norm, Geography and scope relationships in each interaction between in system.

Factors of change in the utilization for law the sea systems.

Factors as before might have affect on various Law of the sea activities past to now and impact may adversely affect both the positive and negative aspects of international society, by we can consider various factors as follows:

First, the system has a number of different to privacy policy different. With a chance to cause

²²James, Paul (1997). "Post-Dependency: The Third World in an Era of Globalism and Late Capitalism". *Alternatives: Social Transformation and Human Governance*. vol. 22 (no. 2): pp. 205–26

the war in two-pole system. Compared with the three-pole system appeared , it appears that there is a low risk associated with war, while the most chance will cause war in several terminals and in case of multipolar system and in case of a system with 5 poles, Most instability

The transition a number of pole or power of whose main roles, By that definition, the system based on the number of Poles (the various nations or the groups of equal power), to change the State of a significant system, the degeneration or the power's loss of roles nation worldwide.

Second, the technological advance is to find benefit of marine to be more ability than before. **Last**, the internal factors such as state's policy under within country conditions with people's will in each country.

In summary Mare Nostrum has a feature to consider five reasons is

- Mare Nostrum does not occur everywhere in the same way that it reduce the importance of the far and the borders.
- Mare Nostrum has affect on several cultures in social.
- Mare Nostrum does not eliminate the distance place. Territory and borders.
- Mare Nostrum might not understand by power technology, but explaining means the link's complexity of Politics, Economics and Culture.
- Mare Nostrum is not panacea that will solve all diseases considered.
- Starting point of universal equality with those of some powers must be linked to sacrificing own self to release by Seri to meet the needs of the population and saw. It is clear that there is no direct link between its own globalization with the release by freedom.

IV.RESULTS

A.Obstruction

Nationalism flow is from the realism concept or intent determine of itself, The view of human nature in negative, From other national power expansion or want to protect themselves too much until was born nationalism flow by impact was feeling to want the independence of various racial groups.

Exploitation of marine that is other states will be able to exploit Exploitation the sea like coastal states with higher technology than can be said that is maritime superpower as a result, subject share of natural resources available in marine inequality and may be sequel to the geographic location of each country, the distribution of power resources, norms of behavior of each state, geographical features and scope of the relationship in each level of interaction between in the system.

This is why the Government has mechanisms to respond to the needs of the population, to the needs of the population inability to liberation according to mechanism the international society severely fully revised guidelines.

1. Polyarchai System²³ pressure from international and domestic political organizations, it refers to an increase of international organizations, the expansion of norms the international law.

2. The concept Balance Power subject about the balance of power hold, there is a possibility and it might be a natural trend that the Government or state, the pursuit greatness in regional or world, At the same time, other States will find a way to protect the country's efforts aforementioned By build strengthening, ourselves, or trying to be a partner with the group resistance the pursuit of the aforementioned ownership, thus, the balance of power, so it's specific requirements, to maintain the independence of the country.

3. Build equality, which is a way to promote regulation and international peace

4. Analysis System, The valuation, Independent state they are intended more independently, In any performed often the restrictions or obligations under the norm or the International regulations, the change of the current international system, to maintain stability in order not to resources are dominated by any one country.

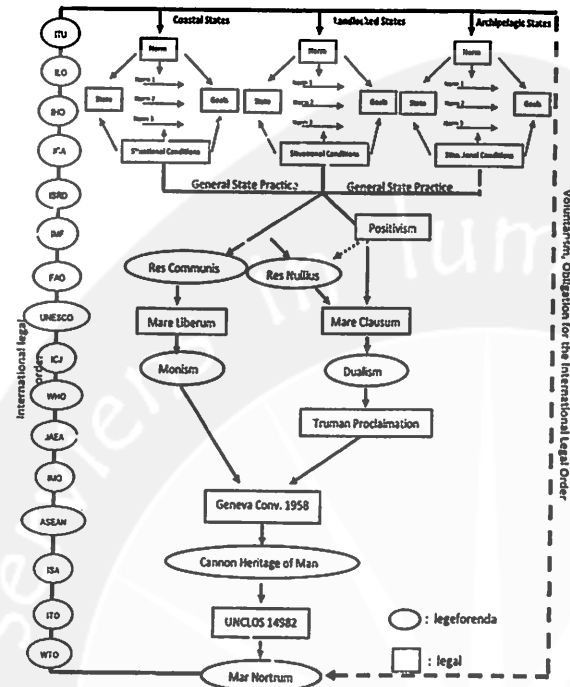
5. The internal factors, national policy and domestic conditions to effect for power.

]

6. The transition between the system time is changed through the power That is joints be considered a hazard, Because there may be a gap between fact and fancy, or understanding of power, due to the fast variable, During this period the perceptions errors may have led to errors in the determination of one or more of the operation in the system of international relations

²³Share the spirit of the state's public, which is the purpose of social and political organization means that everyone in the community to participate both as parents.

Maps of Mare Nostrums Systems between International Law Of The Sea Social Soliday



V. DISCUSSION

A. The concept of International Law of the Sea

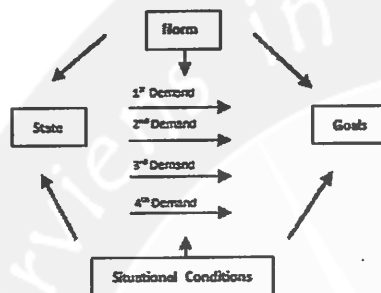
Although the marine utilization had been development for a long time before civilization with the action between humans to humans (Social interaction), which that will be happen to one's face or behind one's back, whatever this also requires the social orientation is to conduct preliminary activities before it is perceived by the idea of another or others agree then made conception existence. That we're distributing kind of the advantage of sea according principal of sociology should be several kind, so author inferred kind of marine conception utilizing like ;

- Conception about human
- Conception about a group of humans
- Conception about planning behaved humans or culture
- Conception about environment around humans

The social mariner or human who took the advantage of the sea by Biological Organism or at present we known that is the pattern (Model), the marine society as a system has a strict territory, had regulated own themselves to conduct for Homeostasis and Equilibrium had been analyzing system to maintain own, so that respond actual a part of composition's social, which had built any structure for assurance of depending on satisfy needs anything such

needs to be “normal” or “abnormal” of the social, to respond demand no matter once or many times, if demand is equal levels generated balance, so that all action generated proposition about presence or conditions of associational and causal statements or it’s called “the structure of social action”. Talcott Parsons given an opinion that in preliminary human depend on principle Voluntaristic²⁴ Theory of Action though decision’s social actor, so that decided to do what liberty.

Situational Constraints Action it causes liberated action or Voluntaristic. This can be



B.summarized below

From this picture is summarized as follows: Individual had the various actions purposes to the target from the choosing of the methods used will be under the rules or norms and situations. Evidence has created a framework for thinking about the relation continuation of the social system, became Institutionalization to mention actor have different backgrounds,Into social relationship the actor has been discipline,Result from the demand necessity and methods these demands will be satisfied by adoption cultural stereotypes, throughtheinteractionbetween themselves.

C.The International Law of the Seas Society

The relationship between the countries is related to the behavior of human beings in the widest level of society is an international society and societies are 2 important features that’s;

1. Member of the exact state because the various States might not change boundary easily or disappeared off the map without cause.
2. The international community is anarchy. We can say that the state is the individual an enlarged of it. And the relationship between the states, there will be conflict. In addition to this, the state is still there, but distrust and aimed to maintain the survival of the national interests and the concept of “Thomas Hobbers²⁵” about on the state of nature is rooted in human nature to look on the negative side.

²⁴ That regards the will as superior to the intellect and to emotion. This description has been applied to various points of view, from different cultural eras, in the areas of metaphysics, psychology, sociology, and theology.

²⁵ Thomas Hobbes believes, that is human by nature is cooperation for interest. Which, concept get to proof in theory of philosophical anthropology a long-standing.

By system structures realism with elements are

1. Structure of the State and behavior influence the attention to
2. The international system that is anarchy, including the
3. The distribution of power in the system
4. The impact of the international system on the behavior of individual State in the world community.

VI. CONCLUSION

In a new era of freedom of the sea, That is the power and freedom of those all States under the terms of international law, that is, every country can have the freedom to take advantage of the sea, As long as that does not conflict with another State as far as international law given to all States, That would be respect upheld to tied for the international customary law, Another principle is Mare Nostrum this initial principle descend, this principle has been shown by the Romans who mentioned that sea "Mare Nostrum" If we consider the sources, the above of the Romans and applied to the era It can provide meaning therefore, Although the law of the sea is an international law that makes freedom of use and seek benefits in accordance with intention international law but they must not forget other intention, That makes the State must follow the common Interest, Which is where those States are required to maintain the benefits and compliance together, In the international cooperation in various aspects, By the benefits joint those in various States to the global community such as in the establishment of the various international organizations to assist the world community. Both in terms of the fishing boat resources Labor. Telecommunications, sciences, culture and stability always fairly.

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Poster Sessions–July 20

Poster Session 1

Management 1 / Communication

B1, Renaissance Sapporo Hotel

2015/07/20 Monday 16:00-17:00

BREFM-22429

The Comparative Study of Government Energy Policy and International Standard
Krisda Bisalyaputra | *Ramkhamhaeng University*

BREFM-22295

A Study on Inpatients' Satisfaction toward Nursing Service in Wards – Nursing Service of Oncology Cases

Shu Ju Yeh | *Tainan Municipal Hospital*

Weir-Sen Lin | *Chia Nan University of Pharmacy and Science*

Chin Hsia Hung | *Tainan Municipal Hospital*

Hua Yin Hsu | *Tainan Municipal Hospital*

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BREFM-22296

Study on Women's Integrated Outpatient Service at Rehabilitate-Operate-Transfer Hospital: A Case of a Regional Hospital in Southern Taiwan

Tsung-Chin Wu | *Tainan Municipal Hospital*

Li-Jung Peng | *Tainan Municipal Hospital*

BREFM-22297

Study on Medical Quality Indicators of Rehabilitate-Operate-Transfer Hospital – A Case of a Regional Hospital in Southern Taiwan

Tsung-Chin Wu | *Tainan Municipal Hospital*

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BREFM-22298

Enhancing Learning Depth ~ The improvement Project for Students under the Teaching Cost Subsidy Program to Achieve IPP from IPE through “Situating Learning: Case Exercise”

Yu-Wen Huang | *Tainan Municipal Hospital*

Chung-I Chen | *Tainan Municipal Hospital*

Sheng Yu Yang | *Tainan Municipal Hospital*

Ching-Chang Fang | *Tainan Municipal Hospital*

Deng-Wei Chou | *Tainan Municipal Hospital*

BREFM-22552

The Study of Healthy Belief Factors with Health Fitness on Coastline Towns in Mid-Taiwan

Yuan-Tsung Tseng | *Tainan Municipal Hospital*

Chi-Chieh Chen | *Tainan Municipal Hospital*

Wen-Chin Lee | *Show-Chwan Memorial Hospital*

BREFM-22390

Optimal Management of the Machine Repair Problem with Working Vacation: Particle Swarm Optimization

Cheng-Dar Liou | *National Formosa University*

BREFM-22403

An Improvement Bikeway Network Model with a Solution Algorithm

Chun-Ying Chen | *Kainan University*

Shangyao Yan | *National Central University*

Huan-Tuan Tseng | *National Central University*

BREFM-22807

How to Produce Excellence Digital Experiences of Interaction in an Online Augmented-Reality Context? From the Perspective of Script Theory and Self-Referencing

Tseng-Lung Huang | *Yuan Ze University*

Chu-Chi Cheng | *Yuan Ze University*

BREFM-22860

The Mediation Effect of Emotional Experience between Emotion Labor and Job Engagement

Shang-Ping Lin | *National Yunlin University of Science and Technology*

Wen-Ling Hsu | *Chaoyang University of Technology*

Yin-Ying Wang | *National Yunlin University of Science and Technology*

Ching-Han Fang | *National Yunlin University of Science and Technology*

ISBSS-4271

Organizational Learning and Innovation among Healthcare Organizations

Rhay-Hung Weng | *National Quemoy University*

Ching-Yuan Huang | *Shu-Te University*

ISBSS-4418

Application of IPA in Service Quality for National University Sport Games

Hui-Chen Lee | *National Yunlin University of Science and Technology*

Mei-Fang Chen | *National Yunlin University of Science and Technology*

ISBSS-4476

Balanced Scorecard to Evaluate the Efficiency of Enterprises Has Led up to ERP: A Case Study of Taiwans Listed Steel Companies

Chi-Kao Chang | *Shih Chien University*

Min-Yuan Fang | *Cheng Shiu University*

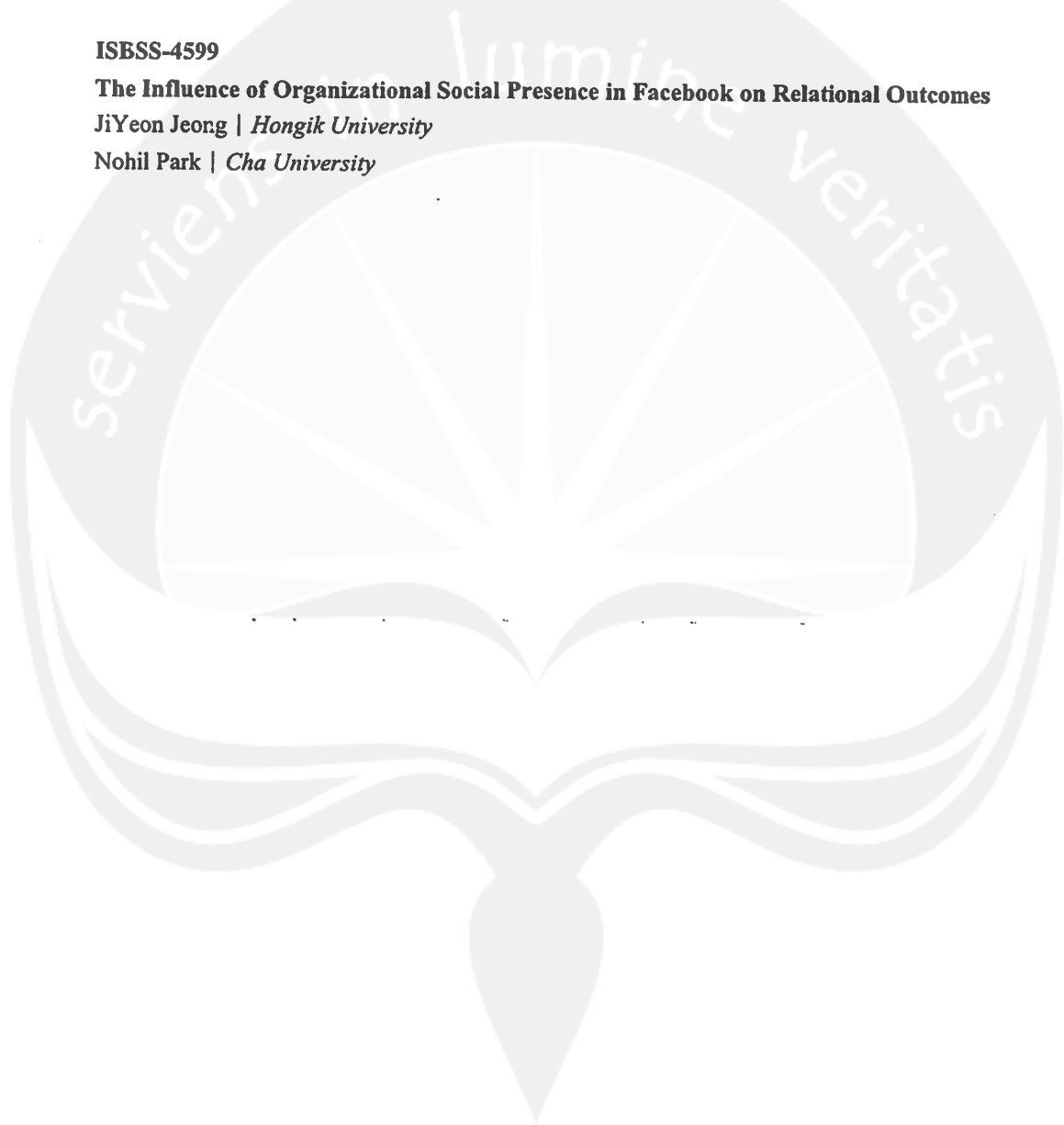
Kai-Ching Fang | *China Medical University*

ISBSS-4599

The Influence of Organizational Social Presence in Facebook on Relational Outcomes

JiYeon Jeong | *Hongik University*

Nohil Park | *Cha University*



BREFM-22429

The Comparative Study of Government Energy Policy and International Standard

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Abstract

The industrial organizations has always been the main consumption for energy. Therefore, a wide range of energy saving techniques have been especially developed and applied for them. The policy from government is considered and implemented through out all government agencies and private sectors to includes lowering costs, or environmental issues, and the competitiveness of enterprises. This research presents the comparative evaluation of the energy management policy of the Ministry of industry, Ministry of defense, and international standards on Energy management. The study focus especially on comparison analysis of government energy policy and guideline and the international standard represented by ISO 50001. The purpose of this paper is to review and evaluate energy use and performance, as well as existing energy efficiency policy and measures according to ISO 50001 in the Thailand industrial sector and the energy management strategy in thre Royal Thai Airforce, in order to highlight possible scenarios for energy management improvements in the future. The paper methodology was derived from a literature review and data analysis. The result found the relevance of ISO 50001 and government policy to be used by industrial sectors and the military to operate and comply with both standards and government agency requirement. The benefit of knowledge can be more harmonize development of industrial operation and improvement in both direction which will lead to energy efficiency consumption and more profits to industrial themselves and overall country energy situation

Keyword: Energy, Industrial Management, Efficiency, Energy policy

Introduction

The energy concerns, alternative energy production, and the sustainability become one of the most important topics and problems from the past to the present in the world. The industrialization leads to energy demands according to the economy growth, financial gains. Individuals need to consume increased electric energy depending to the technological development. Thailand is a developing country in Southeast Asia, with a population of approximately 67 million. As a consequence, given the high and rising price of oil and

electricity, the government has become more aware of the need to promote domestic renewable energy, particularly biomass fuel, in order to reduce reliance on energy imports and improve fuel security. There are also no indicators of the price effects of alternative energy development strategies that could achieve the objectives contained in the plan. Consequently, the energy management of current consumption in workplace and industrial production is important as much as the reliance on energy alternative development

The research

1. Government Energy policy

1.1 The ministry of industry act

In 2009, Thai Government enforced the Energy Management in Controlled industry Law, which became effective. The law created a national framework for the promotion of management aspects of energy consumption in industry, a series of energy management policies were issued. These include the Provisional Administrative Measure, the Tentative Management Method for Energy Development Special Fund, the medium and Long-term Energy Management Plan and the .The eight key mechanisms established by the law are: (1) energy management committee; (2) a primary energy evaluation in the industry; (3) The energy management plan; (4) The energy conservation potentials in each industry; (5) The plan for supportive activities including training and activities; (6) the plan implementation; (7) The assessment and evaluation; (8) revision and improvement of energy plan.

This strategic approach to energy management similarity to many modern management practices, the strategic energy management approaches described by these organizations highlight the need for an information system to set goals, track performance, A strategic energy management approach that includes an energy information system has the power to increase energy savings above and beyond the savings realized by traditional tactical practices alone.

1.2. Ministry of defense energy policy

The ministry of Defense in Thailand issued annual energy management strategy for all units under the ministry. The study focused on specific the royal Thai Airforce because of their leading technology and well-known successful projects. The royal Thai Air Force complied the strategy by their Energy tactical Plan supports Air Force priorities and provides a framework for energy management across the Royal Thai Air Force to achieve energy goals. The Air Force aims to continually improve its energy management processes to maximize energy conservation and promote alternative energy platforms. The Royal Thai Air Force Energy Plan is based on alternative energy development and capability building. This Energy strategy Plan are summarized as: The self reliance on ministry of defense alternative

energy development for future sustainability; the cooperation with other government agencies to increase use of domestic energy production; the more use of alternative energy to replace the traditional energy; and the annual analysis of energy situation in the ministry of defense. The integrates demand-side energy efficiency with supply-side alternative energy utilization, both of which are enhanced by creating a cultural climate that values energy as a mission-critical resource that must be managed.

1. Energy management by organization-wide Reduce Demand through energy efficiency and conservation measures
2. Research and development by researching, testing, and implementing new technologies, including renewable, alternative, and traditional energy sources, the royal Thai Air Force can assist in creating new domestic energy supplies.
3. Alternative energy production by reducing the need of energy and increase the alternative energy efficiently; in cluding the training facilitating, logistic of energy.
4. Human resource building by culture Change. The Royal Thai Air Force must create a culture where all level of command involvement.
5. Knowledge management of energy alternative. The research is well developed to operate many different projects such as the alternative energy demonstration lab, energy management database, and military internet resources.

3. Result and summary

3.1 Perspective policies

In the framework of perspective policies, regulations and negotiated agreements concerning energy efficiency improvements have been introduced or planned for industries. The ISO 50001 focus on long term improvement of energy management through machine and equipment supplement and efficiency improvement. All types of policy and standards require documentation while the ministry of defense focus on alternative energy production and research.

3.1.1 Regulatory aspects. Currently all regulations for the industrial sector, which are related to energy efficiency, are established based on the requirement however, the regulation of government is sometimes different from private companies. Unfortunately, this is the only regulation concerning equipment and energy efficiency for the industrial sector. The result of plan the achievement of the energy saving target will be evaluated for each participant.

Each year the participants will submit to the Ministry of Energy the overview of the results of the previous period and energy saving plan for next period.

3.1.2 The evaluation policies

The ministry of industry requires the documentation by internal audit annually by internal appointed staff in industries and record energy consumption index. While, the ISO 50001

requires the audit committee have to comply with the regulation set forth by ISO 50001. The energy consumption data is recorded in all aspects which is the strong point of ISO 50001.

3.2 Economic policies

The economic policies are related to the financial activities set by the government or other authorities. One of the most widely used economic policies on energy efficiency across countries in the world,

3.3 Supportive policies

The role of the supportive policies is to establish instruments which would help to improve the effectiveness of energy efficiency performance in the industrial sector. Normally, the need for reduction of cost in energy is more intense in private companies than government and the responsible people are not well defined in government. Also, additional tools for industries for easier and better evaluation of energy demand within the production facilities. These availability on energy efficiency technological solutions for industrial companies.

3.3.2 Capacity building. The capacity building can be more effortlessly achieved in government and military.

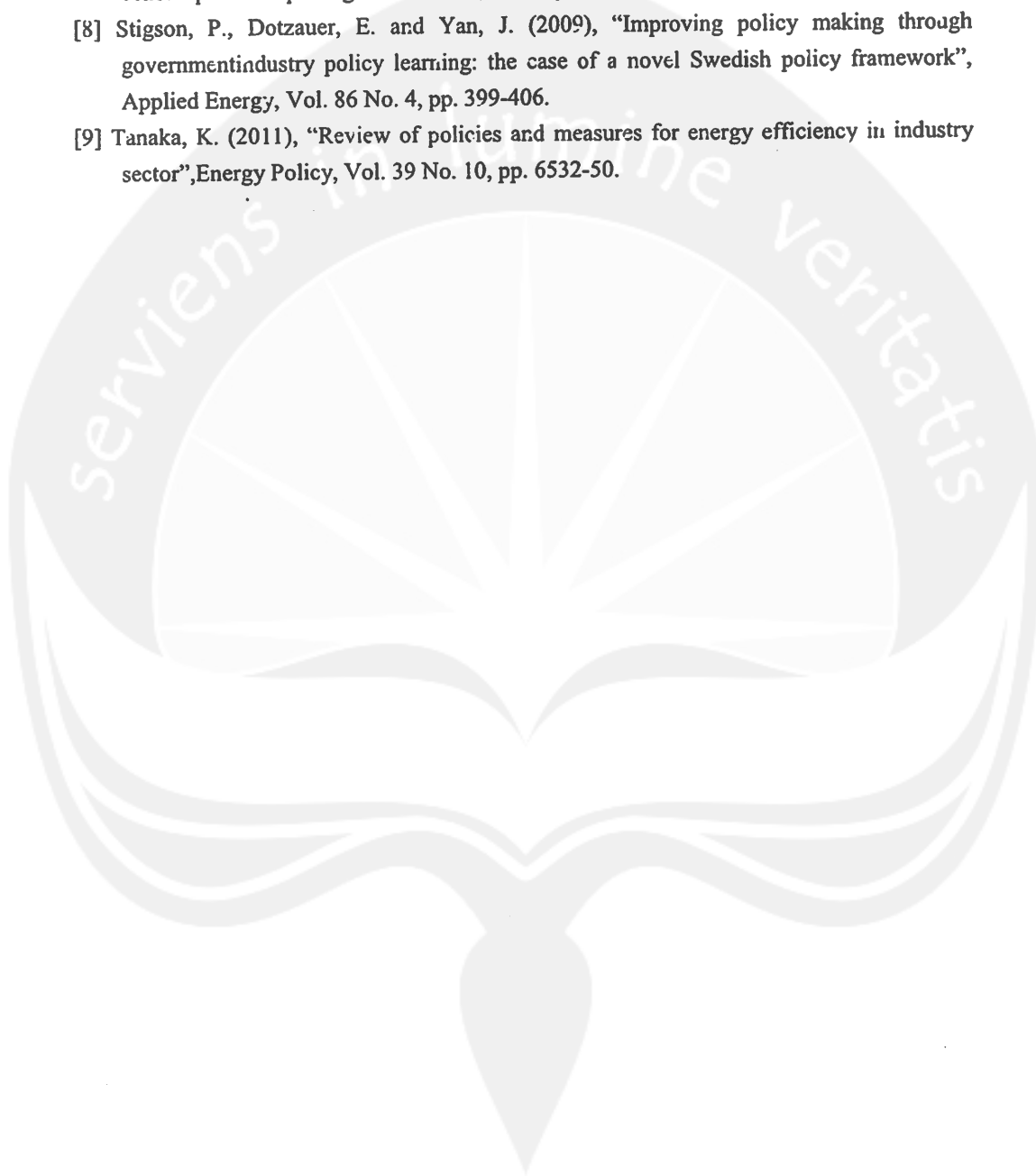
4. Conclusions

This case study demonstrated that energy efficiency targets can be met and exceeded by applying the foundation of basic principles without expensive interventions. It showcases how renewable energy can supplement energy supply once energy efficiency is successfully implemented resulting in further energy savings and a reduced reliance on grid supply.

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BREFM-22295

**A Study on Inpatients' Satisfaction toward Nursing Service in Wards –
Nursing Service of Oncology Cases**

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Abstract

Background: With the increase of national education level and the rapid spread of information through networks and multimedia, the public's demand for medical service quality is growing. Medical institutions are now involved in the industrial environment, leading to keen competition in the medical industry. Hospitals must compete with each other in order to grow and achieve the goal of sustainable operation. Understanding the true demands of patients can provide high medical service quality and acquire patients' satisfaction and loyalty effectively. This study will investigate the current status of oncology inpatients' satisfaction toward nursing service, relevant factors influencing the satisfaction toward nursing service, as well as the relationship between the satisfaction and loyalty of tumor patients.

Methods

Based on past literatures, a preliminary questionnaire with 40 questions was developed. An expert validity review was conducted by two academic experts and three professional experts, and 9 questions were deleted. After the qualification of the Institutional Review Board (IRB) of the hospital, a pretest was carried out with 30 cancer patients hospitalized for more than one day. One item with low reliability was deleted to for the final questionnaire. A total of 325 questionnaires were distributed and 300 were valid, giving a response rate of 92.3%. Statistical analyses were performed through descriptive statistics, independent t-test, one-way ANOVA, and Pearson correlation.

Result

Nursing service is divided into three dimensions: "Professional knowledge", "Ward facilities", and "Operation procedure" by a factor analysis. Results show that gender has a significant difference from satisfaction of "Operation procedure". Patients with different education level have significant differences from satisfaction of "Professional knowledge". Royalty is also significant different among patients with different home income. Three dimensions of satisfaction and loyalty are significant correlated. Loyalty is increased when patients are more satisfied.

Conclusion:

Results of the research indicate when a cancer inpatient is more satisfied, his/her loyalty toward nursing service will be increased. Thus, it is recommended for a hospital to set up strategies for improving inpatients' satisfaction of nursing service during hospitalization. Attitudes and appearances of nursing staffs are particularly important of inpatients' satisfaction. Cancer inpatients already feeling weak from chemotherapy, if a nurse can give more cares and considerations, inpatients' satisfaction will increase and so will the chance of these patients coming to the hospital when they need help the next time.

Key word : Inpatients' satisfaction, Nursing Service, Oncology

BREFM-22296

**Study on Women's Integrated Outpatient Service at
Rehabilitate-Operate-Transfer Hospital: A Case of a Regional Hospital in
Southern Taiwan**

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Abstract

In recent years, the Government of Taiwan has been promoting actively integrated ambulatory care service focused on patients. The purpose is to allow patients to be treated for all sicknesses at the same examination room, shorten patients' waiting time, and achieve the result of reducing therapeutic duplication. Currently, hospitals have established different integrated ambulatory care services, such as Integrated Geriatric Care Clinic and Integrated Care Clinic for Cancer Patients. President Ma Ying-jeou made an announcement in 2011, requesting large-scale hospitals to set up an "Integrated Ambulatory Care for Women". The key points to providing such service include the following: 1. Integrate women's cancer screening, diagnose and treatment in one single clinic for women. 2. Establish integrated outpatient service for common problems associated with women's health. 3. Set up special clinics for menopause related issues. Taiwan Joint Commission on Hospital Accreditation (TJCHA) also demands that the integrated women's outpatient service be included in hospital accreditation. Therefore, under the requests of the Government and TJCHA, large-scale hospitals have established integrated clinics for women.

Tainan Municipal Hospital was founded 27 years ago. As the first Rehabilitate-Operate-Transfer Hospital in Taiwan, it had to overcome many problems to set up an "integrated care clinic for women". For example, because the space was already crowded, it was quite difficult to plan another region for the service. Furthermore, all the doctors were already very busy when providing outpatient services, so allowing these doctors to provide the services during the same time period was also a great challenge. Thus, the superintendent and deputy superintendents were convened to host a preparatory meeting for drafting relevant strategies. They decided in the end to set up an "All in One Integrated Care Clinic for Women". Three doctors (director from OBS-GYN, Urology and Surgery) will

provide outpatient services during the same time period so that female patients can consult at the same time doctors from different departments. This can decrease therapeutic duplication and number of examinations, shorten waiting time, reduce the time used going to and returning from the hospital, as well as provide preferential measures. When an outpatient makes an appointment to be diagnosed by two or more medical departments during the time set for integrated care clinic, the registry fee for one of the departments will be remitted as a premium for female patients.

OBS-GYN, Urology and Surgery were preliminarily set as the departments for women's integrated ambulatory care because they are the ones women consult most often. In addition, women may have to work on weekdays and take care of their family at night, so they may not have time for diagnosis. Therefore, Saturday morning was set as the time period for the integrated care clinic for the convenience of female patients. Posters were posted and publications were submitted to media for publicizing the service.

Tainan Municipal Hospital will continue to make plans for bringing new departments into the women's integrated ambulatory care service. Patient satisfaction surveys will also be conducted to enhance the quality of the "integrated care clinic for women".

Keywords : Women's Integrated Outpatient Service · Rehabilitate-Operate-Transfer Hospital

BREFM-22297

**Study on Medical Quality Indicators of Rehabilitate-Operate-Transfer
Hospital – A Case of a Regional Hospital in Southern Taiwan**

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Abstract

Background

Tainan Municipal Hospital is the first Rehabilitate-Operate-Transfer Hospital(ROT) hospital in Taiwan and a regional teaching hospital. It has been running for 27 years and receives regular inspection and performance accreditation implemented by Taiwan Joint Commission on Hospital Accreditation (TJCHA) and the City Government. The hospital received in 2014 the TJCHA accreditation, which is conducted once every four years, and passed it as a regional hospital with excellent performance. In recent years, when TJCHA requests for hospital accreditation, medical quality indicators must be reported to evaluating commissioner for reference. Beginning this year, the number of items to be reported for medical quality indicators has been raised, showing clearly that these indicators are significant data to a hospital and they have great value for data related to medical quality. Associated personnel will conduct analyses when data on medical quality is abnormal. This study discusses the differences between the medical quality indicators of Tainan Municipal Hospital and other hospitals in the national that are of the same grade.

Methods

TJCHA requires hospitals to provide medical quality indicators, including nosocomial infection rate, 14-day readmission rate, ratio of hospitalization period exceeding 30 days, crude death rate, employee needle-stick event rate and prescription error rate. Independent-sample t-test analyses will be carried out using the above information from January through December of 2014 and the data reported by regional hospitals in the nation.

Result

The research results show significant differences ($p<0.05$) in nosocomial infection rate, ratio of hospitalization period exceeding 30 days, crude death rate and prescription error rate, and the statistics of Tainan Municipal Hospital are higher than the national mean values. The 14-day readmission rate and employee needle-stick event rate show significant difference ($p<0.05$), and the statistics of Tainan Municipal Hospital are lower than the national mean values.

Conclusion

According to research results, several medial quality indicators of Tainan Municipal Hospital are higher than other hospitals, but there are also some that are lower. These may be related to the severity of patients' sicknesses or other relevant causes. Thus, it is recommended that if the monthly statistics of Tainan Municipal Hospital's medical quality indicators are within normal range and little change, no measures are required. On the contrary, if there are great changes in the monthly data, it is recommended that associated personnel perform analyses to prevent the happening of any problems.

Key word : Rehabilitate-Operate-Transfer · Medical Quality Indicators

BREFM-22298

**Enhancing Learning Depth ~ The improvement Project for Students under
the Teaching Cost Subsidy Program to Achieve IPP from IPE through
“Situating Learning: Case Exercise”**

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Abstract

Background

Whether it is the new teaching hospital accreditation or the teaching cost subsidy program, teaching hospitals are required to provide inter-professional education (IPE) for student training courses. This hospital hoped to increase inter-professional practice (IPP) through case exercise, but we discovered that the students remained at the learning phase. For the students to not only absorb experiences by being the audience, but also put them to practical use so that the students can show IPP when providing patients clinical care, the method of situated learning was adopted, and students played healthcare workers during IPE educational training courses.

Methods

First, a clinical case was selected and, by method of case exercise simulation, inter-professional member were ask to participate, carry out discussions and seek the optimal treatment. Next, the simulation results were displayed in the hospital for students to learn how professionals conducted patient-centered care and implemented it clinically to enhance medical quality.

However, after this was executed for some time, we found that the professionals who interact clinically with colleagues of other professional sectors were still mostly teachers. Most students remained in the phase of IPE's passive education. This may be because the students had little experience, which was unfavorable for interaction, so they were unable to perform the inter-professional practice they learned.

When the IPE courses began in Q3 of 2013, the hospital selected cases, asked professionals to participate, and required that teachers must lead students in case discussions. Through discussions carried out during two to three preliminary meetings, as well as teacher guidance, student learned how to work as a team with professionals. In addition, in the hospital-wide IPE courses, students played a role in a team through situated learning to increase their chance in participation and accomplish the process of achieving IPP from IPE.

Result

The results include the following: 1. Among the 10 professions that participated in the case exercise in Q3 of 2013, 4 professions were played by students, which accounted for 40%. 2. Satisfaction surveys were conducted, and the statistic standardization results showed the average rate of students' satisfaction toward course participation for the first and second half of 2013 were 77.99% and 83.04%, respectively, which was an increase by 5.05%. 3. Question No. 7 of 2013 performance indicator – "Regarding whether the medical team can implement inter-professional collaboration for patients to receive holistic healthcare, what are the hospital's specific measures?" The score was 2.33, which was an increase by the score of 0.33 in 2012. Furthermore, according to statistics by TJCHA, the score was "above average", and the market share was 29.32% compared to other hospitals in the nation.

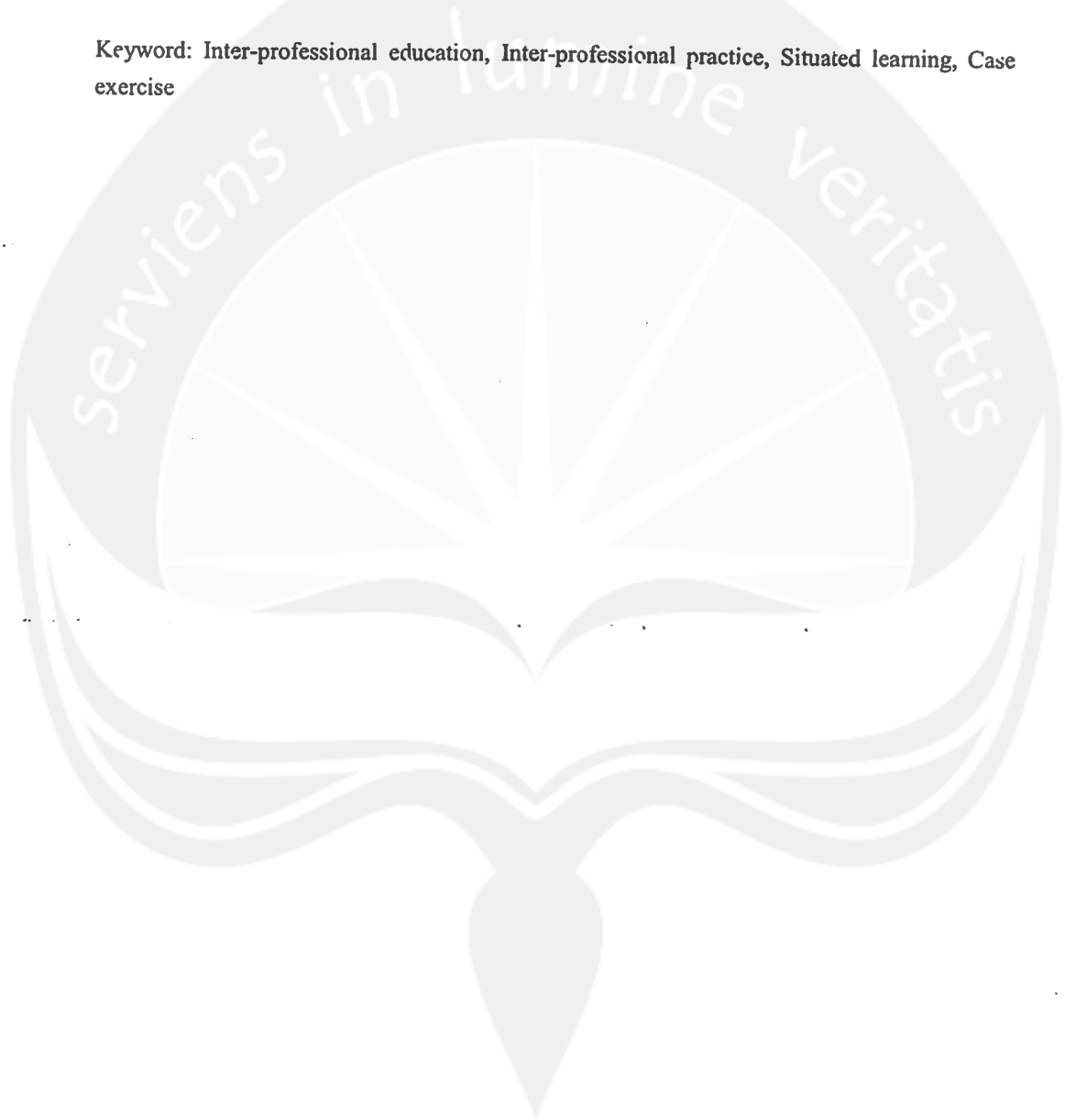
Conclusion

The method of problem-oriented situated case teaching provides members from different professional sectors an opportunity to interact with each other. Through inter-professional case discussions, teacher and students of different professions are arranged to participate collectively for students to take part in discussions to understand the different roles played by professionals during patient healthcare process. The things students learned are then executed in inter-professional care in wards. This is the process of guiding IPP from IPE. By learning

through IPE and applying IPP to perform patient-centered teamwork, IPP and IPE completed each other.

However, such strategy has only been implemented for two quarters. The outcome is good in the short term, but long-term efforts and educational training promotion are required to cultivate “medical personnel with collaborative healthcare capacity” for achieving the goal of patient-centered holistic medicine and integrated healthcare.

Keyword: Inter-professional education, Inter-professional practice, Situated learning, Case exercise



BREFM-22552

**The Study of Healthy Belief Factors with Health Fitness on Coastline
Towns in Mid-Taiwan**

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Abstract

Background

The purpose of this study is to examine healthy fitness and related influence factors. Since the elderly bring out the problems of chronic disease. The less medical information senior citizens get, the worse ability of socialization they have. The physical fitness and health assessment were conducted on coastline towns in Mid-Taiwan. Health promotion program was designed in accordance with the results.

Method

This study adopted a cross-sectional correlative design, and sampled 428 residents on coastline towns in Mid-Taiwan. Healthy belief structural questionnaire collected data and Functional Fitness test were performed. The measurement acquired regular health examinations, blood pressure, perceived physical health status levels, body mass index, as well as evaluated strength, flexibility, and cardiovascular endurance.

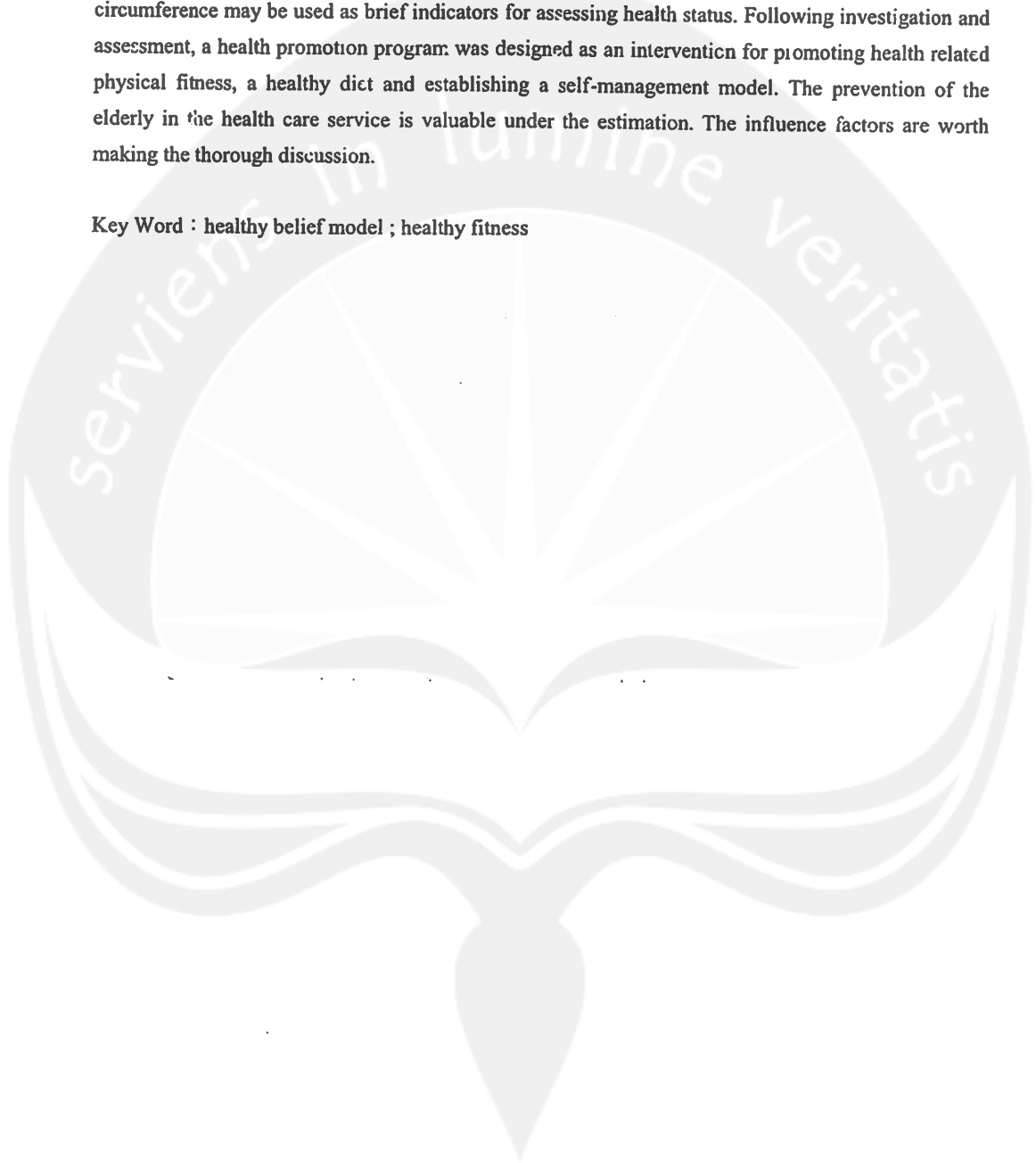
Result

Based on the healthy belief model, the result reported that 68.5% residents performed better healthy fitness. Our result shows that the variables of perceived benefits on action such as regular health examinations ($P<0.01$), alcohol ($P<0.05$), chewing betel nut ($P<0.05$), and controlling body weight ($P<0.05$) are statistically significant factors in the screening data check-up. The terms of behavior of exercise variables, regular exercise ($P<0.05$), vigorous exercise ($P<0.05$) are statically significant.

Conclusion

The study just wants to develop a policy to enhance the utilization of medical care check-up; moreover, help aging people to improve their health. Regular exercise and health examination are the most effective solution about this problem. Aside from regular health examinations, BMI and waist circumference may be used as brief indicators for assessing health status. Following investigation and assessment, a health promotion program was designed as an intervention for promoting health related physical fitness, a healthy diet and establishing a self-management model. The prevention of the elderly in the health care service is valuable under the estimation. The influence factors are worth making the thorough discussion.

Key Word : healthy belief model ; healthy fitness



BREFM-22390

**Optimal Management of the Machine Repair Problem with Working
Vacation: Particle Swarm Optimization**

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Abstract

In a recent paper, Wang, Chen and Yang [K.-H. Wang, W.-L. Chen, and D.-Y. Yang, Optimal management of the machine repair problem with working vacation: Newton's method, Journal of Computation and Applied Mathematics 233(2009) 449-458][1] derived a cost model to simultaneously determine the optimal values of number of operating machines and two different repair rates, and maintain the system availability at a certain level. In their approach, a direct search method is first used to determine the optimal number of operating machines followed by the Newton's method to search for the two best continuous variables. However, this two stage search method restricts the search space and cannot guarantee global minimum solutions. In overcoming these limitations, this study employs a particle swarm optimization algorithm to ensure a thorough search of the solution space in the pursuit of global minimum solutions. Numerical results support the superior search characteristics of the proposed solution.

Keyword: direct search method; Newton's method; optimization; particle swarm optimization

1. Introduction

The machine repair problem (MRP) with vacation policy in different frameworks has attracted particular attention in the field of queuing systems. A good review of literature can be found in the work of Wang, Chen, and Yang [1], who studied the MRP with working vacation and proposed a direct search method (DSM) and Newton's method (NM) for unconstrained optimization problem to find the global minimum value until the system availability constraint is satisfied.

In their two-stage approach, Wang, Chen, and Yang [1] first employed DSM to determine the number of operating machines M , while the other two continuous variables μ_v and μ_B were assumed to be constant and fixed. However, this assumption considerably restricts the search space, resulting in the final solution falling into a local optimal solution. In the second stage, NM is utilized to search the best combinations of two continuous variables (μ_v, μ_B),

while the number of operating machines M are assumed to be fixed according to the search result of DSM in the first stage. This method restricts the search space in a similar manner, causing the searching result to fall into local extrema.

The particle swarm optimization (PSO) algorithm is a stochastic search technique, motivated by the social behavior simulation of bird flocking or fish schooling, developed by Kennedy and Eberhart [2]. An excellent survey on the PSO algorithm was first proposed by Alrashidi and EL-hawary, [3]. The enormous power of this technique lies in its ability to satisfy performance criteria without any prior knowledge of candidate configurations, and the facility for finding the global optimum result. This technique has been successfully applied to a variety of fields, such as power and voltage control, antenna design, sandwich material design, and flowshop scheduling problems. A good literature review can be found in the work of Clerc [4]. The main advantages of the PSO algorithm are its simple structure, immediately accessible for practical applications, ease of implementation, robustness, and speed in acquiring solutions. Therefore, the PSO algorithm has considerable potential for analyzing the complex optimal management problem of M/M/1 MRP with working vacation.

In this note, we use the PSO algorithm to simultaneously determine the three optimum variables, M^* , μ_v^* , and μ_B^* , to minimize the cost function and ensure system availability at a set minimum level. We conducted both NM and PSO using numerical examples employed by Wang, Chen, and Yang [1], and compared the search results.

2. PSO algorithm

The Particle swarm optimization (PSO) algorithm is an evolutionary computation technique mimicking the behavior of flying birds and their means of information exchange. As an evolutionary algorithm, PSO conducts a search through updating a population (called a swarm) of individuals (called particles). The relationship between the swarm and particles in PSO algorithm is similar to the relationship between a population and its chromosomes in GA (Genetic algorithm). In PSO algorithm, the problem solution space is described as a search space and each position in the search space is a possible solution for the problem. When PSO algorithm is applied to an optimization problem with m variables, the solution space can be formulated as an m -dimensional search space and the value of the j th variable is formulated as the position in the j th dimension. All particles cooperate to discover the best position (solution) in the search space.

In PSO algorithm, the particle movement is influenced by three factors: inertia, particle best position ($pbest$), and global best position ($gbest$). Inertia is the velocity of the particle in the latest iteration and can be controlled by the inertia weight. The purpose of inertia is to hinder particles from moving back to their current positions. The $pbest$ position is the best solution

found by each particle by itself so far. The *gbest* position is the best solution found by the entire swarm so far, i.e. *gbest*, and it is the best position among all particles.

Each particle moves according to its own velocity, which is randomly generated toward both *pbest* and *gbest* positions. For each particle *i* and dimension *d*, the velocity and position at iteration *l* can be updated using the following equations.

$$V_{id}^l = wV_{id}^{l-1} + c_1rand(1)(P_{id}^{l-1} - X_{id}^{l-1}) + c_2rand(2)(P_{gd}^{l-1} - X_{id}^{l-1}) \quad (1)$$

$$X_{id}^l = X_{id}^{l-1} + V_{id}^l \quad (2)$$

In expressions (1) and (2), the term V_{id}^l is the velocity of particle *i* in dimension *d* at iteration *l*, whose value is limited to the parameter V_{max} (i.e. $|V_{id}^l| \leq V_{max}$), as proposed by Kennedy, et al. [5] to prevent an explosion in velocities. The term X_{id}^l is the position of particle *i* in dimension *d* at iteration *l*, whose value is limited to the parameter X_{max} , (i.e. $|X_{id}^l| \leq X_{max}$). The term P_{id}^{l-1} is the best position of particle *i* in dimension *d* until iteration *l*-1, while P_{gd}^{l-1} is the best position of the swarm (entire particles) in dimension *d* until iteration *l*-1. The inertia weight *w* was first proposed by Shi and Eberhart [6]. It is used to control the exploration of particles. The particles move at high velocities using a larger *w*, and low velocities using a smaller *w*. A larger *w* could prevent particles from being trapped in local optima and a smaller *w* could encourage particles to carefully exploit the same search space. Constants *c*₁ and *c*₂ are used to determine whether particles prefer moving toward a *pbest* position or a *gbest* position. The term *rand*(1) and *rand*(2) are two independent random variables in [0,1].

The main steps of the general PSO algorithm is described as follows:

Step 1: Setup parameters and encode a particle. Set iteration *l*=0.

Step 2: Initialize a population of particles with random positions and velocities in *d*-dimensional space.

Step 3: Evaluate the objective values of all particles, set *pbest* of each particle equal to its current position, and set *gbest* equal to the position of best initial particle.

Step 4: Update the velocity and position of particles according to Eqs. (1) and (2). Set *l*=*l*+1.

Step 5: Evaluate the objective values of all particles.

Step 6: For each particle, compare its current objective value with its *pbest* value. If the current value is better, then update *pbest* with the current position and objective value.

Step 7: Determine the best particle of the entire current population with the best objective value. If the objective value is better than that of *gbest*, then update *gbest* with the current best particle.

Step 8: If a stopping criteria is met, then output *gbest* and its objective value; otherwise, go back to step 4.

3. Numerical results

To compare the search results of NM and PSO algorithms for the cost minimization problem, we test the same examples as those used by Wang, Chen, and Yang [1]. For each of the tested examples, we set the number of operating machines M in the range of 3 to 15 and both μ_v and μ_B are continuous on the interval of 0 to 10. The various parameters and constraints were all set according to those used by Wang, Chen, and Yang [1]. Although the PSO algorithm appears to be sensitive to the tuning of various weights and parameters, according to the experiences of many experiments, the following PSO parameters can be used (Shi and Eberhart [6]; Yoshida, et al, [7]).

PSO Algorithm Parameters

- population size = 100;
- generations = 200 ;
- inertia weight factor is set to vary linearly from 0.9 to 0.4 ;
- the limit of change in velocity of each member in an individual was as $V_{\max} = 4.0$,
- acceleration constant $c_1 = 2.0$ and $c_2 = 2.0$.

PSO was coded in MATLAB 7.0 and all results were computed using an Intel-Pentium 2.4GHz PC with 1.97GB RAM. Table 1 shows the numerical results of 100 independent experiments for each example by PSO algorithm. Note that, for the convenience of comparison, the mean and maximum ratios were utilized. The ratio of the solution produced by the PSO was calculated by V/V^* , where V is the solution generated by the PSO algorithm and V^* is the minimum solution among 100 independent experiments.

From Table 1, we observe:

(1) NM was unable to acquire the global minimum value in the 6 instances. This implies that the NM is not well suited to searching for optimal values (M^*, μ_v^*, μ_B^*) to minimize the cost function.

(2) the mean values (V/V^*) of PSO algorithm varied from 1.0028~1.0081 for all instances. This implies that the PSO algorithm is robust for all test instances.

- (3) the max values (V/V^*) of PSO algorithm varied from 1.0117~1.0176 for all instances. This implies that the searching quality for the PSO algorithm is very high.
- (4) the error percentages $(NM - V^*)/V^*$ of NM and PSO varied from 10.2496~12.6485 for all instances. This implies that the PSO provides better results than NM.
- (5) the CPU times to attain solutions per run was approximately 8-10 seconds, depending on the selection of parameter (Table 1). This implies that the PSO is capable of solving the test instances within a reasonable time.

Table 1 Newton's method and PSO in searching the optimal solution

(λ, η)	(0.4,0.3)	(0.5,0.3)	(0.6,0.3)	(0.5,0.4)	(0.5,0.6)	(0.5,0.8)
Newton's Method (NM)						
M^*	9	8	7	8	8	8
A_v^*	0.9997	0.9987	0.9981	0.9990	0.9993	0.9995
μ_v^*	3.8565	3.8551	3.628	3.5758	2.9520	2.2037
μ_B^*	5.1508	5.2854	5.180	5.6086	6.0890	6.4337
$F(M^*, \mu_v^*, \mu_B^*)$	50.3936	58.8005	66.7758	58.6625	57.8100	56.4284
PSO						
M^*	15	15	15	15	15	15
A_v^*	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
μ_v^*	6.4709	7.4569	8.4802	7.0542	5.9609	5.3917
μ_B^*	8.0441	9.3347	9.9223	9.7301	9.9733	9.9994
$F(M^*, \mu_v^*, \mu_B^*)$	45.5006	52.5828	59.2780	52.5159	52.0245	51.1798
Mean	1.0028	1.0048	1.0081	1.0051	1.0081	1.0078
Max	1.0142	1.0147	1.0117	1.0176	1.0123	1.0129
Error %						
$(NM - V^*)/V^*$	10.7537	11.8246	12.6485	11.7043	11.1207	10.2496

Mean=mean of V/V^* . Max=max V/V^* . V = solution by PSO. V^* = minimum solution among 100 experiments. NM= solution by Newton's Method.

4. Conclusions

This study investigated the optimization problem for the cost function in the M/M/1 MRP with working vacation. This problem was previously studied by Wang, Chen, and Yang [1]. Our approach involved the use of the PSO algorithm to search for the global minimum solutions. The numerical results indicate that NM is capable of searching only a local solution space, and thus cannot be guaranteed to find a global minimum value. The ability of the PSO to thoroughly explore the solution space supports the superior search characteristics of the proposed solution.

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An Improvement Bikeway Network Model with a Solution Algorithm

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Abstract

In this study, a network flow technique and mathematical programming method was used to construct a bikeway network improvement model under an existing bikeway network system. The objective of the model is to minimize the cyclists travel time subject to limited budget and the related operating constraints. Besides, we develop a solution algorithm for the proposed model.

Keywords: Improvement bikeway network; Network flow technique; Mathematical programming

1. Introduces

In Taipei, bikeway demand increases gradually, but the past building bikeway network is not meet request for bicyclists. Under reality conditions and a preliminary bikeway network system, how to construct new bikeway, improve existing bikeway network, satisfies bicyclists demand and insure traffic safety, which is an important issue. Improvement planning for the Taiwan bikeway network is performed by a government planning official, who only considers each link between two intersections. The improvement planning process involves a series of local adjustments, most often conducted manually and based on personal experience, which is time-consuming and ineffective.

A number of studies have been carried out dealing with bikeway network planning and strategic planning problems for public bicycle sharing systems. For example, Martinez et al. (2012), Sayarshad et al. (2012), Lin et al. (2013), Dell'Amico et al. (2014) and Yan et al. (2014). Besides, some researchers have used statistical methods to forecast cyclist demand or carried out individual interviews to understand the present situation, for example, Monique and Chandra (2003), Martens (2007), and Lin and Yu (2010). Some researchers have focused

on riding safety. For example, Allen-Munley et al. (2004), Theodore et al. (2006). We find that often only users demand, building cost, bikeway service levels are considered for planning new bikeway network. To the best of our knowledge, there has been no research regarding improvement bikeway network that accounts for under an existing bikeway network system.

2. Existing Bikeway Improvement Planning Problem

After several years, the preliminary bikeway network could not satisfied bicyclist probably by following reasons: original network incomprehensive, number of bicyclist increased, or the other reasons. Government has to improve the bikeway condition (upgrade existing bikeways type and construct new bikeways) to satisfy original bicyclists and attract new bicyclists to use. In theory, the high class bikeway will provide high safety and short travel time. However, the government has a limited budget. In addition, the bikeway continuity, safety risk, travel time will affect the volition of using bikes. Therefore, we developed an optimal model for planning an improvement bikeway network under the existing bikeway network system and a solution algorithm to minimize bicyclists travel time costs, subject to the limited government budget, maximal tolerated travel time, safety risk, bikeway capacity, bikeway continuity, and cyclists demand satisfaction.

3. Improvement Bikeway Planning Model

As shown in Figure 1, an improvement bikeway network represents a potential improvement bikeway type. Nodes and arcs are the two primary components in the bikeway network. A node represents an intersection, whereas an arc designates both candidate bikeway types and link between two intersections. Arcs are composed of six types: a) one-way bike path arc, b) one-way bike lane arc, c) one-way bike route arc, d) two-way bike path arc, e) two-way bike lane arc, and f) two-way bike route arc, each corresponding to a decision variable (binary). Note that thick arcs are only used to mark existing bikeway network mark, which are not decision variables.

To facilitate problem solving, these networks are designed to be symmetrical to the improvement bikeway network, as shown in Figure 2. Each cyclist-flow network represents a specific origin-destination pair. The node and arc are according to the improvement bikeway network. A node stands for an intersection, whereas an arc flow value represents the number of cyclists riding bikes on a specific bikeway type between two intersections. The cyclist origin is a supply node and destination is a demand node. The destination node is a demand node for which the node demand value is equal to the cyclist demand. The origin node is a supply node. Arcs also include six types A bike path traveling arc represents the traveling of commuters on a bike path between two specific intersections. The arc flow value represents

the number of commuters. The arc cost is set the corresponding travel time on each arc. The arc flow's upper bound is infinity, and the arc flow's lower bound is zero.

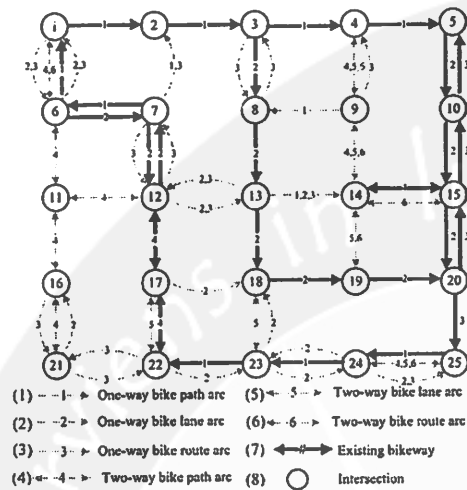


Figure 1 Improvement bikeway network

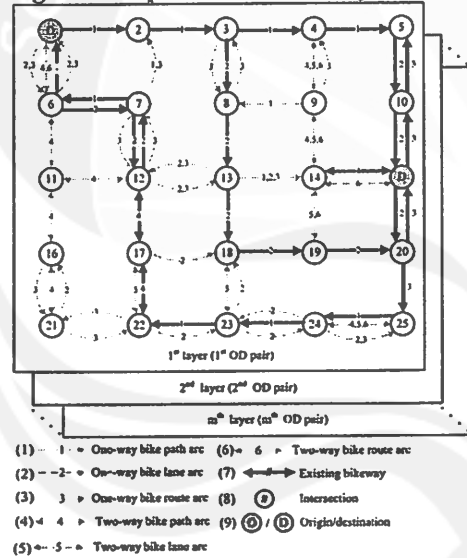


Figure 2 Cyclist-flow networks

The notations and symbols used in the model formulation are as follows.

Sets:

- A_{ij}, D_{ij} the set of all bikeway type arcs of one-way/two-way between link (i, j) in the improvement bikeway network;
- B_{ij}^m the set of all bikeway type arcs (one-way and two-way) between link (i, j) in the m^{th} cyclist-flow network,
- M the set of all cyclist-flow networks;
- N^m the set of all nodes in the m^{th} cyclist-flow network;
- P the set of all links in the improvement bikeway network;
- P_1 the set of all links which have constructed a bikeway at the existing network.
- P_2 the set of all links which have not constructed a bikeway at the existing network.
- Q^m the set of all links in the m^{th} cyclist-flow network;
- α^m / β^m the set of all origin (supply) / destinations (demand) nodes in the m^{th} cyclist-flow network;
- γ^m the set of all transfer nodes in the m^{th} cyclist-flow network;

Parameters:

- t_{ijk}^m the travel time of the k^{th} type bikeway between link (i, j) in the m^{th} cyclist-flow network;
- f^m the number of cyclists for the m^{th} OD pair;
- c_{ijk} the k^{th} type bikeway construction/improvement cost between link (i, j) in the improvement bikeway network;
- b The total construction budget.
- d_{ijk} the risk for the k^{th} type bikeway between link (i, j) in the improvement bikeway network;
- g_{ijk} the flow upper bound of the k^{th} type bikeway between link (i, j) in the improvement bikeway network;
- ut^m / ud^m the cyclist travel time/risk upper bound of the m^{th} cyclist-flow network;

Variables:

- x_{ijk}^m the flow of the k^{th} type bikeway between link (i, j) in the m^{th} cyclist-flow network;
- y_{ijk} the binary variable of the k^{th} type bikeway between link (i, j) in the improvement bikeway network. If y_{ijk} , it represents building the k^{th} type bikeway between link (i, j) ; otherwise, zero.

The model is formulated as follows:

Model

$$\text{Min } Z = \sum_{m \in M} \sum_{ij \in Q^m} \sum_{k \in B_{ij}^m} t_{ijk} x_{ijk}^m \quad (1)$$

s.t.

$$\sum_{j \in N^m} \sum_{k \in B_{ij}^m} x_{ijk}^m - \sum_{v \in N^m} \sum_{k \in B_{vi}^m} x_{vik}^m = 0 \quad \forall i \in r^m, \forall m \in M \quad (2)$$

$$\sum_{j \in N^m} \sum_{k \in B_{ij}^m} x_{ijk}^m = f^m \quad \forall i \in \alpha^m, \forall m \in M \quad (3)$$

$$-\sum_{j \in N^m} \sum_{k \in B_{ij}^m} x_{ijk}^m = -f^m \quad \forall i \in \beta^m, \forall m \in M \quad (4)$$

$$\sum_{ij \in P} \sum_{k \in A_{ij} \cup D_{ij}} c_{ijk} y_{ijk} \leq b \quad (5)$$

$$\sum_{k \in A_{ij} \cup D_{ij}} y_{ijk} = 1 \quad \forall (i, j) \in P_1 \quad (6)$$

$$\sum_{k \in A_{ij} \cup D_{ij}} y_{ijk} \leq 1 \quad \forall (i, j) \in P_2 \quad (7)$$

$$y_{ijk} = y_{jik} \quad \forall k \in D_{ij}, \forall (i, j) \in P \quad (8)$$

$$\sum_{m \in M} x_{ijk}^m \leq g_{ijk} y_{ijk} \quad \forall k \in A_{ij}, \forall (i, j) \in P \quad (9)$$

$$\sum_{m \in M} (x_{ijk}^m + x_{jik}^m) \leq g_{jik} y_{jik} \quad \forall k \in D_{ij}, \forall (i, j) \in P \quad (10)$$

$$\sum_{ij \in Q^m} \sum_{k \in B_{ij}^m} t_{ijk} y_{ijk}^m \leq ut^m \quad \forall m \in M \quad (11)$$

$$\sum_{ij \in Q^m} \sum_{k \in B_{ij}^m} d_{ijk} y_{ijk}^m \leq ud^m \quad \forall m \in M \quad (12)$$

$$x_{ijk}^m \in Z^+ \quad \forall k \in B_{ij}^m, \forall (i, j) \in Q^m, \forall m \in M \quad (13)$$

$$y_{ijk} = 0 \text{ or } 1 \quad \forall k \in A_{ij} \cup D_{ij}, \forall (i, j) \in P \quad (14)$$

The objective function (1) is to minimize the total cyclists travel time. Constraint (2)/(3)/(4) ensures flow conservation at the supply/demand/transfer node in each cyclist-flow network. Constraint (5) ensures total construction and improvement cost does not exceed the budget. Constraint (6) ensures that the link, which has constructed a bikeway at the existing network, have to exist a bikeway type at least. Constraint (7) ensures that no more than one bikeway type can be constructed when the link has not constructed a bikeway at the existing network. Constraint (8) ensures that two-way bikeway type has constructed at the particular link (i, j).

Constraint (9) ensures that the sum of all cyclists does not exceed the bikeway capacity on every link for each one-way bikeway type. Constraint (10) ensures that the sum of all cyclists does not exceed the bikeway capacity on every link for each two-way bikeway type. Constraint (11) indicates the upper bound constraints of cyclist travel time for each cyclist-flow network (origin-destination pair). Constraint (12) indicates the upper bound constraints of cyclist risk for each cyclist-flow network (origin-destination pair). Constraint (13) ensures the integrality and non-negativity of the flow variables associated with the cyclist-flow network for each cyclist-flow network. Constraint (14) ensures that the flow variables in the improvement bikeway network are either zero or one.

Since practice problem sizes can be huge, it could be difficult to find the optimal solutions within a reasonable period of time. Therefore, we develop a solution algorithm based on decomposed method to solve the model. The search process is outlined in Figure 3, and the steps are subsequently listed.

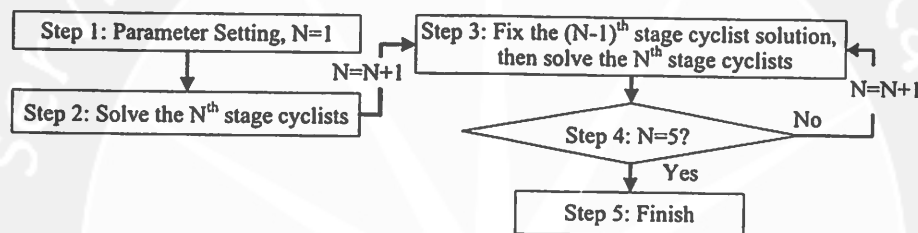


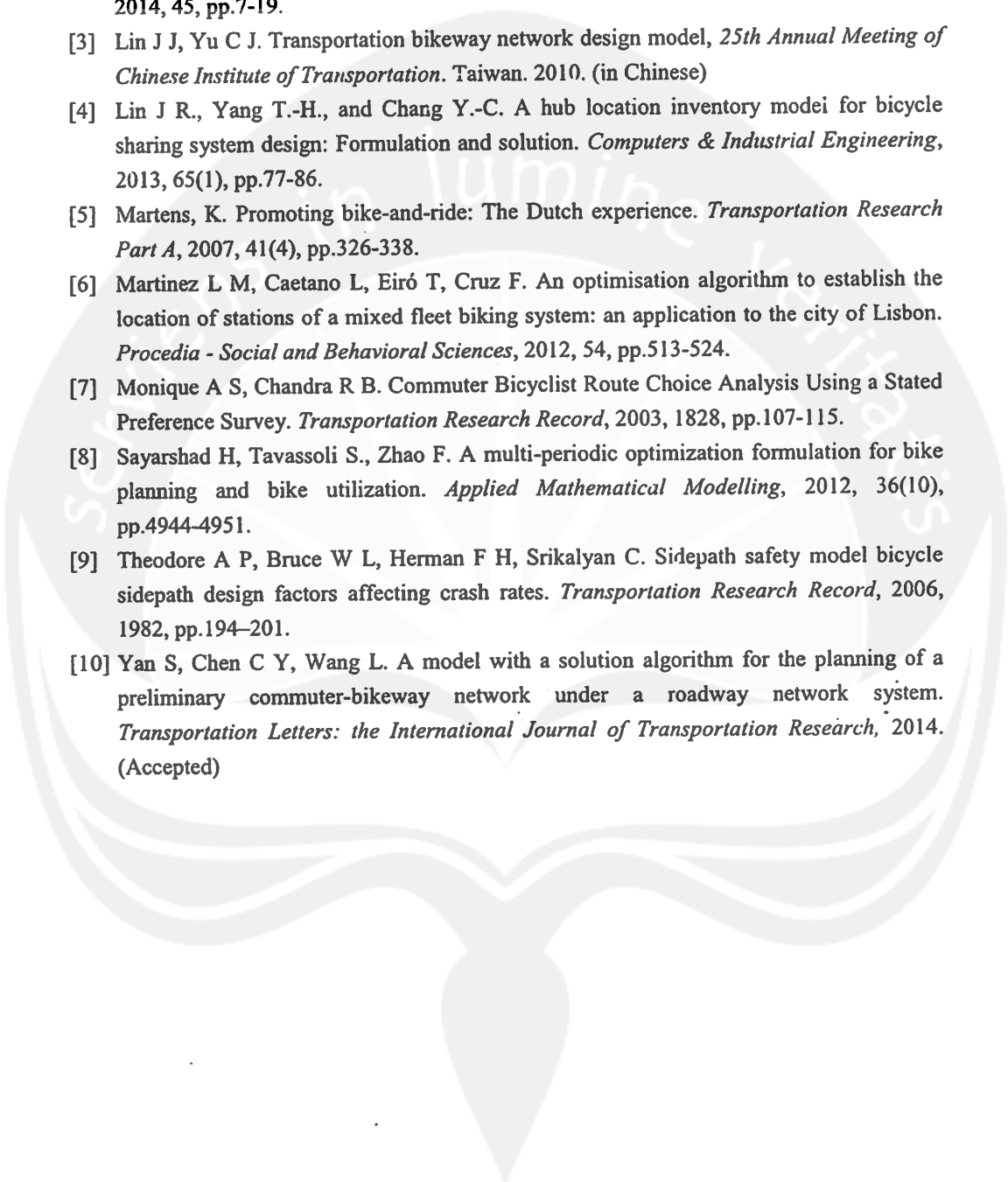
Figure 3 Solution process

5. Conclusion

In this study, we employed network flow techniques and a mathematical programming method to develop an improvement bikeway network model and solution algorithm. The model includes an improvement bikeway network, multiple commuter-flow networks, and a set of side constraints across the networks. Mathematically, the model is formulated as an integer multiple commodity network flow problem. We developed an algorithm to solve the bikeway network planning model for the proposed model. We evaluated the practical performance of the solution method by generating and testing numerous cases using data from the Traffic Engineering Office of the Taipei City Government (2012) report. The test results show that the solution method efficiently resolves real large-sized problems. The most time-consuming problem required approximately 24.04 minutes to solve, which is sufficient for practical planning decisions.

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How to Produce Excellence Digital Experiences of Interaction in an Online Augmented-Reality Context? From the Perspective of Script Theory and Self-Referencing

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Abstract

This study determined that in an interactive augmented-reality context, vivid memories significantly influenced four types of online exploratory consumption behavior (i.e., concentration, exploratory behavior, playfulness, and time distortion), based on script theory. In addition, this study indicated that in the interactive augmented-reality context, consumers' sense of ownership control and autotelic need for touch significantly influenced the relationship between vivid memories and the four types of exploratory consumption behavior, based on self-referencing theory. The results of this study can assist online vendors in using augmented-reality interactive technology for establishing consumer persuasion models.

Keyword: Script theory, self-referencing theory, augmented-reality interactive technology (ARIT)

Introduction

Augmented reality (Figure 1) mainly applies 3D visual and auditory effects and haptic imagery to provide a mental-simulation experience to consumers [5]. Previous consumer studies [7] have indicated that consumers with a high autotelic need for touch can satisfactorily process visual and tactile image information, but not vice versa. Predictably, the degree of autotelic need for touch affects the results of using ARIT for creating visual and auditory effects and haptic imagery, and thus for activating vivid memories. Similarly, the degree of autotelic need for touch should affect the relationship between vivid memories and exploratory consumption experience. This study investigated how an autotelic need for touch affects the relationship between vivid memories and exploratory consumption experience. The results of this study can serve as a reference for ARIT users in designing an experience method for persuading consumers. The purposes of this study are presented as follows:

- (1) Based on script theory, to investigate the relationship between vivid memories and exploratory consumption experience in an ARIT context;
- (2) To investigate how consumers' sense of ownership affects the relationship between vivid memories and exploratory consumption experience in an ARIT context;
- (3) To investigate how consumers' autotelic need for touch affects the relationship between vivid memories and exploratory consumption experience in an ARIT context.

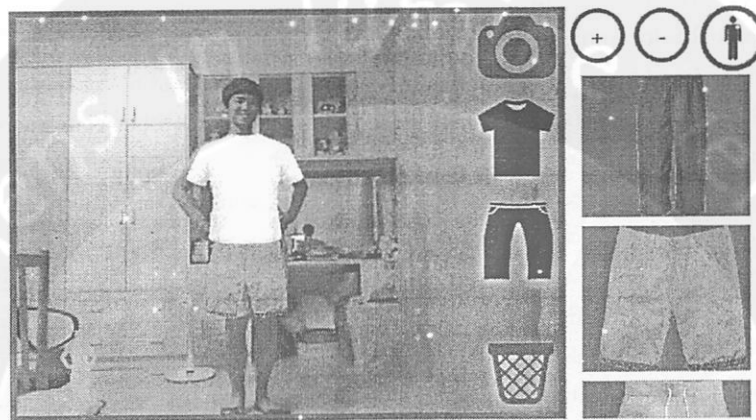


Figure 1. An example of the online AR try-on environment

Method

Laboratory Study

To test the aforementioned hypotheses, this study applied a task-oriented method. According to an eMarketer survey, the sales volume for online apparel and accessories has rapidly increased. Among e-commerce transactions, apparel and accessories are the best-selling products [3]. This study employed ARIT in an online clothes-fitting context (Figure 1) and applied the snowball sampling by way of email for inviting online consumers to use ARIT for trying on online apparel. After online consumers consented to participate in this study, the consumers were brought into the laboratory. After the researcher explained the research procedure and purpose of the online clothes-fitting software to a participant, the researcher left the laboratory, and the participant freely tried on online apparel products without interruptions (Figure 1). Whenever a participant completed the task or wished to leave, he or she could leave the laboratory freely. Subsequently, the participant completed an anonymous questionnaire. After completing the questionnaire, the participants received a gift for participating. The apparel products that the participants tried on included women's and men's apparel. The women's apparel included 17 types of apparel products (e.g., dresses). The men's apparel included four types of apparel products (e.g., shirts, sweaters, and T-shirts).

For the apparel products, 13 colors, such as black, blue, milk-white, gray, pink, and yellow, could be tried on.

Result

Based on script theory and self-referencing theory, this study proposes a research model and verified this model. The results of this study suggested several theoretical implications. First, based on script theory, this study determined that vivid memories positively influenced exploratory consumption experience (i.e., concentration, exploratory behavior, playfulness, and time distortion). Particularly, online consumers exhibited playful and exploratory consumption behavior immediately after ARIT was used for activating the vivid memories of the consumers. In addition, consumers who possessed highly vivid memories exhibited more apparent playful and exploratory consumption behavior than did other consumers. Therefore, vivid memories induced subsequent consumption behavior and helped online consumers rapidly immerse themselves in interactive technology consumption activities. The results indicate that during interactive technology consumption activities, vivid memories induce four types of exploratory consumption experience. The results are consistent with the suggestion proposed by Erasmus et al. [2], who suggested applying script theory to investigate consumption behavior. The present study applied the concept of vivid memories to investigate online interactive technology experience based on script theory, and thus, script theory is not limited to studies on physical marketing [6].

This study indicated that self-referencing positively influenced the activation of consumers' vivid memories and that a strong sense of ownership (e.g., a sense of ownership control during augmented-reality interactive activities) was a critical factor for producing a strong self-referencing effect. Therefore, a strong sense of ownership helped activate the vivid memories of online consumers and strengthened the relationship between vivid memories and exploratory consumption behavior. The results were not obtained and were disregarded in previous studies that used an advertising context as a self-referencing context [4]. In addition, this study inferred that a sense of ownership can produce a strong self-referencing effect in an interactive technology consumption context (e.g., ARIT). Therefore, the results of this study contribute to the research field of self-referencing.

According to previous studies on interactive augmented reality [5], the expected outcomes of manipulating online artificial bodies must be synchronous with actual outcomes in order to use a sense of ownership control for producing a strong sense of ownership. This viewpoint is consistent with media synchronicity theory; in other words, the synchronous effect of interactive technology substantially influences the performance in task implementation [1]. A sense of ownership control has a synchronous characteristic, and a sense of synchronous ownership control is an indispensable factor for producing a substantial self-referencing effect and activating vivid memories. Briefly, the results of this study regarding the sense of

ownership control substantially contributed to verifying and applying self-referencing theory and media synchronicity theory.

Finally, this study determined that the degree of an autotelic need for touch influenced the formation of self-referencing and activation of vivid memories. The results of the study supplemented insufficient research that used the effect of haptic sensation on self-referencing for exploring consumption behavior. In particular, consumers with a high autotelic need for touch exhibit excellent event schemata and memory structure for processing haptic information. Therefore, when exposed to visual imagery and 3D stimulation that induces a sense of ownership control in an augmented-reality context, these consumers can easily retrieve previous haptic information from memory to produce a strong self-referencing effect and to activate highly vivid memories. In addition, consumers with a high autotelic need for touch use a systematic information processing method for examining the relationship between new haptic information and their memory and knowledge [8], thereby enhancing their confidence and expressing a positive attitude toward their consumption decisions. By contrast, consumers with a low autotelic need for touch do not have event schemata and a memory structure for processing haptic information and therefore cannot use a high degree of self-referencing to activate vivid memories and to explore and experience consumption activities. These consumers cannot produce a substantial self-referencing effect. In other words, consumers with a higher autotelic need for touch can produce a stronger self-referencing effect and activate their vivid memories to a higher degree. The aforementioned results regarding the autotelic need for touch contribute to the research field of how consumers process haptic information.

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**The Mediation Effect of Emotional Experience between Emotion Labor
and Job Engagement**

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Abstract

Job engagement is a key issue that deserves attention within the framework of emotional labor. This is due to its role in increasing employee happiness and productivity. Past literature rarely examined the relationship between emotional labor and job engagement, which composes the major research purpose of this study. The result shows that positive emotional expression, faking negative emotions and dealing with other negative emotions was positively associated with job engagement. Happiness, aggravation, sadness, inferiority have mediating effects towards the relationship between positive emotional expression and job engagement, but the anxiety was not significant. Finally, few researches have been conducted in the past to examine the relationship between emotional labor and job engagement. Therefore, the hypothesis is a general in terms of reference inference, and might not focus on only the relationship between the two factors. Supporting evidence in terms of literature and research material should be further supplemented in the future, in order to construct a more solid theoretical framework.

Keywords: Emotional labor, Emotional experience, Job engagement.

Introduction

Since the concept of emotional labor was proposed by Hochschild (1983), the study of emotion has evolved from the personal sphere into its commercialization. Organizations have started to strategize various methods and management measures to allow for employees to demonstrate the most appropriate emotional expressions in order to satisfy customer expectations. Furthermore, organizations can integrate organizational strategy with various human resource management systems to specify and regulate how employees express appropriate emotions while performing their duties and assignments (Anderson, 1993; Ashforth and Humphrey, 1995; Rafaeli and Sutton, 1988). Consequently, when work regulations of employees involve emotional expression and control, or when personal effort to regulate emotions is needed by the employee in order to satisfactorily perform their roles within the organization, it can be defined as an aspect of emotional labor (Wu, 2013).

Emotion experience is a complex phenomenon, from a purely subjective perception to action tendencies, behavior observation and physiological change included within its context (Luca, Deiner and Larsen, 2003). Those findings indicate the growing importance of emotional or sentimental expression of employees within an organization (Ashforth and Humphrey, 1993; Grandey, 2000; Morris and Feldman, 1996). Whether employees are asked to conceal or suppress negative emotions and present a positive emotion in order to comply with emotional requirements stipulated within the organization (Brotheridge and Grandey, 2002; Hochschild, 1983; VanMaanen and Kunda, 1989). Employees are therefore required to naturally express agreeable emotions while performing their job duties, and appropriately manage personal emotions in order to meet organizational requirements.

Employees, when faced with organizational requirements and regulations, demonstrate conflicting psychological responses, and will base their decision criteria on internal self-assessment and external environmental factors, in order to further calibrate and measure role played by the employee (Kahn, 1990). Under these circumstances, employees will receive interferences caused by organizational interactions with other parties and organizational requirements on emotional expressions of employees. This will consequentially result in multiple stress factors for the employee, and a higher tendency to perceive frustration and setbacks. Employees can produce various responses when confronting setbacks: job engagement or job withdrawal can occur. When employees successfully overcome negative emotions brought on by setbacks, such as rage, and dejectedness, etc., and transform the obstacle into a driving force, with full dedication and pride in the job, with continuous passion and proactive engagement in their jobs (Bakker, Schaufeli, Leiter and Taris, 2008; Jones & Harter, 2005). Those prior finding support the view that job engagement is a key issue that deserves attention within the framework of

emotional labor. This is due to its role in increasing employee happiness and productivity (Schaufeli and Salanova, 2007). Past literature rarely examined the relationship between emotional labor and job engagement (Lu and Guy, 2014; Grandey, 2000), which composes the major research purpose of this study.

Hypotheses

Kahn(1990) proposed the concept of “Work Engagement” and defined it as “the harnessing of organization members' selves to their work roles; in engagement, people employ and express themselves physically, cognitively, and emotionally during role performances.”, and viewed this as a form of job engagement. This concept is focused on personal and job performance and the relationship dynamic between the two (person-role relationships), including employee’s involvement in their job functions as defined in the job specification (Lawler and Hall, 1970; Lodahl and Kejnar, 1965); organizational commitment (Mowday, Porter, and Steers, 1982), and a sense of detachment and alienation in their jobs (Seeman, 1972). The above demonstrates job involvement not only as an employee’s set job performance, but also the emotional state of the employee that fluctuates and changes along with the job assigned.

In an attempt to fit into a pre-defined role as required by the organization, very often the employee will put on a “fake mask”, and conceal emotions or suppress true thoughts and feelings in order to properly perform their tasks or interact with other people. Therefore, employees often attempt to try making this disguise more genuine and believable in order to isolate and conceal true performance or behavior (Hochschild, 1983). If this mode of behavior is undertaken for a long period of time, It often induces a sense of imbalance and discord for the employee, which could result in a misalignment of internal emotions and outside performance and behavior. The employee might not know how to regulate their own self and the role required in their jobs, and even less likely will they find meaning and value in their jobs, with the consequence being a decline in job performance and motivational effect.

Employees who need to conceal emotions while on their job posts actually need to dedicate a lot of effort into accomplishing this (Brotherige and Lee, 2002). If more resources are needed to conceal true personal emotions, then less effort is paid to execute the job responsibilities. On the contrary, if the employee can harness the true emotions required in their jobs together with true feelings, and induce a positive outcome in their job attitude and emotional expression, whilst also keeping positive faith in their actions (Grandey 2003), then the employee will treat his/her employer and job in a positive manner (Rafaeli and Sutton, 1987). Once the employee participates and has affinity for his/her job, they will gradually motivate

themselves to manifest appropriate expressions of emotion, and are willing to continue this uniformity in true inner feelings and external performance (expression of emotion). After experiencing such emotional labor, employees also have a tendency to believe these experiences to be worthwhile, useful, and with value (Kahn, 1990), which ultimately allows them to play the emotional role as required and defined by the organization. Summing up the above, this study proposed that the relationship between emotional labor and job engagement are influenced by the mediating effects of emotional experience, with the hypothesis below:

H₁ : The mediating effect of Emotional experience on the relationship between emotional labor and job engagement.

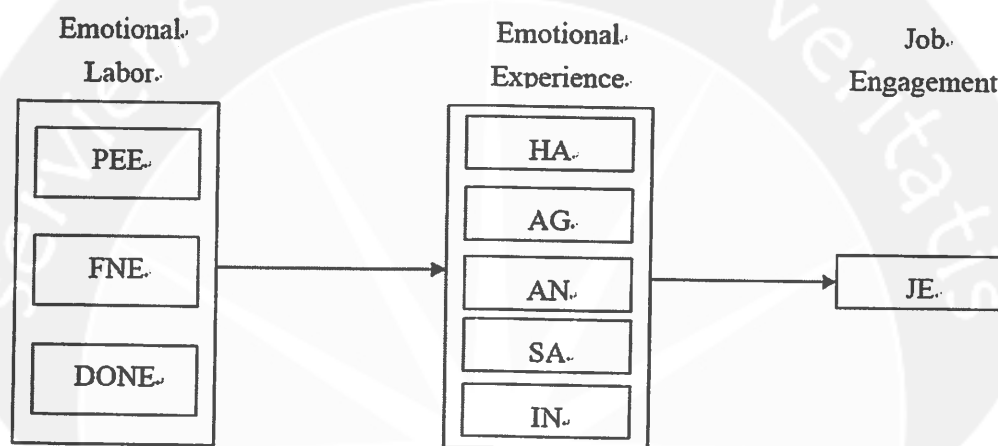


Figure 1 Research framework

Methods

1. Samples and Procedures

This study attempted to analyze and verify the construct validity and practical criterion validity from the perspective of emotional labor by using measurement tools in past literature. First, the literature of emotional labor, emotional experience, and job engagement was collected. Next, a survey was collected by Taiwanese researcher. The responders are derived from general employees in companies across Taiwan, and examined the relationship between emotional labor (EL), emotional experience (EE), and job engagement (JE). This was to ensure the fit of reliability and validity of research outcome. After the removal of incomplete questionnaires, a total of 154 questionnaires, with a return rate of 96.25%.

2. Measures

Contextualization is the positioning of research into a certain context. Therefore, this questionnaire was designed into four parts to developed questionnaires by researchers in Taiwan. The scale ranging from 1, "almost never," to 5, "very often". The first facet

measured emotional labor and asked interviewees the strategies adopted to accommodate regulations governing emotional expressions in their respective workplaces. The scale was developed by Lin (2000) and Wu (2003). The questionnaire including positive emotional expressions (PEE), faking negative emotions (FNE), and dealing with other negative emotions (DONE). Examples from the five-item included “you need to express certain behaviors to communicate a certain image as required by the position”. The second part is measurement of emotional experience, inquiring what emotional responses were expressed within certain occupational situations. We used the scales developed by Plutchick (1980) and Jean (1998). The scales included “Happiness (HA)”, “aggravation (AG)”, “anxiety (AN)”, “sadness (SA)”, and “inferiority (IN). Examples from the five-item included “Events that occurred during work that induced sad emotions”. The third part is the measurement of job engagement, which referenced Schaufeli, Salanova, Gonzalez-Roma and Bakker (2002). Examples from the five-item included “I feel pride in my work”. The fourth part is the measurement demographic variable to describe the data gathered, with an aim to understand sample data structure and basic characteristics.

Results

1. Descriptive Statistics and Correlations

Descriptive Statistics of this variables in this study is showing in Table1, including the Mean, S.D. and correlations matrix between variables.

Table 1 Descriptive statistics and correlations analysis

		Mea n	SD	PEE	FNE	DON	HA	AG	AN	SA	IN
						E					
	PEE	3.93	.72	1							
	FNE	3.38	.96	.592*	1						
EL											
	DON	3.46	.92	.603*	.958*	1					
E											
	HA	3.11	.48	.299*	.195*	.195*	1				
	AG	2.81	.60	-.048	.185*	.174*	.207*	1			
EE											
	AN	2.86	.73	-.096	.153	.154	-.199	.499*	1		
	SA	2.21	.66	-.071	.195*	.149	-.138	.520*	.518*	1	
	IN	2.49	.69	-.022	.132	.163*	.060	.285*	.358*	.351*	1
JE	JE	3.17	.90	.464*	.316*	.280*	.647*	-.415	-.275	-.165	-.215

1** $p < .01$, * $p < .05$; 2.PEE: Positive emotional expression, FNE: Faking negative emotions, DONE: Dealing with other negative emotions, HA: Happiness, AG: Aggravation, An: Anxiety, Sa: Sadness, In: Inferiority.

2. Tests of Hypotheses

Table 2 The results of mediating effect

Path	Path coefficient		Path	Path coefficient		Path	Path coefficient	
	Indirect	Total		Indirect	Total		Indirect	Total
PEE→JE	-	.452**	FNE→JE	-	.496*	DONE→JE	-	-.468
PEE→HA	.175	.627	FNE→HA	.028	.524	DONE→HA	-.011	-.479
PEE→AG	.075	.527	FNE→AG	-.079	.417	DONE→AG	-.022	-.490
PEE→AN	-	-	FNE→AN	-	-	DONE→AN	-	-
PEE→SA	-.042	.410	FNE→SA	.106	.602	DONE→SA	-.053	-.521
PEE→IN	.040	.492	FNE→IN	.056	.552	DONE→IN	.011	-.457
F	.630							
R ²	33.604							

** $p < .01$, * $p < .05$

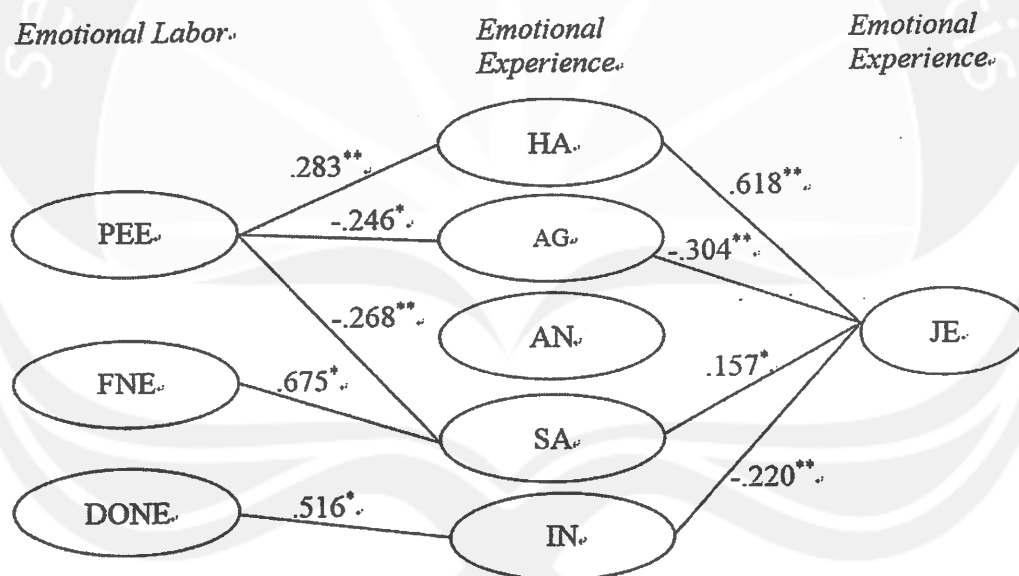


Figure 2 The mediated effects of variables.

Table 2 shows the results of mediating effect. The Positive emotional expressions ($\beta=.452$, $p<.01$) and faking negative emotions ($\beta=.496$, $p<.05$) were positive associated with job engagement. Dealing with other negative emotions was negative associated with job engagement, but it was not significant. The results of the mediated test these variables, showing that HA has a partially mediate affect between PEE and JE. However, AG and SA have partially mediate affect between PEE and JE, but it was negative. SA also has partially

mediate affect and will influence faking negative emotions on job engagement. Lastly, dealing with other negative emotions will affect job engagement due to inferiority emotions, which indicates that a feeling of inferiority has mediating effect.

Conclusions And Discussion

1. Conclusions

Based on the results, the positive emotional expression, faking negative emotions and dealing with other negative emotions was positively associated with job engagement, supporting hypothesis. That is, emotional labor is the appropriate expression of emotion required or expected by the organization on the employee (Ashforth and Humphrey, 1993). When this becomes a source of stress for the employee, job engagement will reflect an individual's regard and emphasis towards the job (Lodahl and Kejner, 1965; Rabinowitz and Hall, 1977). If the employee attempts to undertake different emotional strategies to fulfill the organization's requirements during work, the emotions they exhibit might possibly be authentic. The willingness to adjust emotions and feelings from the inside will help the employee to exhibit a higher sense of passion and energy towards the job. In attempting to verify the relationship between emotional labor and emotional experience, this study has found that inferiority is the only emotion that has no significant. The reason from the fact that service industries exist to serve customers, so no matter what customers or supervisors the employee meets, it is still considered to be a part of the job, and hence has a tendency to induce certain emotions (for example: happiness or aggravation). Inferiority is a passive emotion that exhibits one's lack of faith to one's ability. For the service industry, which contains relatively few barriers into entry and employment and inherently requires the employee to respect and provide great service to the customer, employees perceived feelings of inferiority is more unlikely to appear and measured.

Happiness, aggravation, sadness have mediating effects towards the relationship between positive emotional expression and job engagement. This also shows that when employees perceive aggravation and sadness, they will exhibit decreased job engagement. In other words, this conclusion corresponds to Guy et al (2008) and Hsieh et al (2012)'s previous research, and describes how if employees have the ability to express authentic emotions during work, they will be more inclined towards actively engaging in their jobs. However, if they are required to conceal their own emotions to fulfill organizational requirements and customer expectations, then their perception of engagement in their jobs will decrease. Sadness has a mediating effect between faking negative emotions and job engagement, it means that employees more often applied this way, and then they will more often feel sadness, but still increase job engagement. This result was failing to support hypothesis, and might result from the fact that although employees might feel sadness, but in order to continue working at the

organization, they will still ask themselves to continue committing to job engagement. Inferiority has a mediating effect between dealing with other negative emotions and job engagement. The result was consistent on the organizational contexts. When the employee's responsibility is to deal with other's negative emotions, the employee might perceive his/her own shortcomings or faults in the mediating process. Furthermore, mishandling of the situation might also result in dissatisfaction on both sides. In the long term, this will decrease passion for the job and increase the risk of job burnout and considerations to resign from the job.

2. Limitations and Suggestions

This study adopts employees of various companies as a mediating effect to examine the influence of emotional labor on job engagement. The result from our study was supported to the hypothesis. However, job engagement is a factor within emotional labor that deserves further attention. This is due to the fact that it will enhance the perceived well-being of the employee and increase productivity (Schaufeli and Salanova, 2007). However, few researches have been conducted in the past to examine the relationship between emotional labor and job engagement (Lu and Guy, 2014). Therefore, the hypothesis is a general in terms of reference inference, and might not focus on only the relationship between the two factors. Supporting evidence in terms of literature and research material should be further supplemented in the future, in order to construct a more solid theoretical framework. On the other hand, the research was general employees from companies across different industries with a broad scope, which might result in a less detailed analysis of emotional labor. We suggest that future studies can focus on different groups in across industries and employment positions, to enlarge the applicability of the research topic. Lastly, this research only viewed one layer of measurement standards. Future research should include different levels and positions within an organization (such as: supervisors), to ensure complete links and research concept.

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Organizational Learning and Innovation among Healthcare Organizations

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Abstract

Organizational innovation is the process of transforming embedded knowledge into embodied knowledge, where organizational learning is the critical mechanism to influence its efficiency and efficacy during the knowledge transformation process. Organizational learning can be categorized into exploration learning and exploitation learning. Past studies have confirmed how organizational learning affects organizational innovation. However, because external knowledge has become the critical organizational innovation source gradually, how organizations implement acquired external knowledge to develop innovation is usually related to past learning styles. Thus, this study tries to explore the impact of exploration and exploitation learning on organizational innovativeness among healthcare organizations from open innovation view. The mail survey was used to collect research data from top hospital managers in Taiwan. The overall valid response rate was 44.23%. We applied structural equation model to test the research hypothesis. Results indicated that external knowledge depth and breadth will positively affect hospital innovation through the mediation of realized absorptive capability (RACAP). We not only proved open innovation does exist in hospital industry but also found that RACAP is the critical capacity to enhance hospital innovation directly. In addition, we found exploration learning, which benefits hospital's RACAP and improves external knowledge breadth and depth to further enhance RACAP, is the most effective learning style.

Key Words Organizational Learning, Organizational innovation, Healthcare Organizations

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Application of IPA in Service Quality for National University Sport Games

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Abstract

The purpose of the study was to explore the perspectives of athletes who participated in the National University Sport Games in Taiwan regarding to the service quality with 308 valid subjects. Importance-performance analysis was used to discover the service quality; the questionnaire was formed to understand the needs and feelings of participants, in order to help managers to provide better service quality. The result of the study was indicated that thirteen items, those were both high in importance and performance, in which must keep; in the meanwhile, there were four questions in high importance and low in performance, in which must be in the first priority to improve to enhance service quality and increase participants' satisfaction. According to the result, managerial recommendations were discussed and suggestion for further researches also mentioned.

Keywords: national university sport games, importance-performance analysis, service quality

1. Introduction

To achieve a good outcome from sport competition, management unit always ponder how to make good preparation and understand what the participants really want, in order to have proper service quality. Service quality was the premise of customer satisfaction (Cronin & Taylor, 1992; Oliver, 1993; Spreng & MacKoy, 1996), providing the services to reach the expectations of participants will increase their satisfaction and enhance future participation, in which will be managers mainly concern. Therefore, the purpose of the study was to understand the expectation of participants for service quality in National University Sport Games, and provide the information to the managers of the organization to improve service quality to increase participants' satisfaction.

1.1 Service quality

Service quality was defined the customers' comparison between service expectation and service performance (Grönroos, 1982; Lewis & Booms, 1983; Parasuraman, Zeithaml & Berry, 1985; Woodside, Frey & Daly, 1989). Lewis and Vincent (1990) believed that service quality has to fulfill the need of the customers. In addition, Tang and Hu (1996) thought that service quality was from the customers' point of view to satisfy the customers.

1.2 Importance-performance analysis

Importance-performance analysis (IPA) was first mentioned by Martilla and James (1977) that the results of average of each item can be graphically displayed and easily interpreted in two-dimensional grid with label of four quadrants for further marketing strategy decisions. Haemoo (2001) discovered that IPA can assist customers to consider those factors before purchasing products or services. IPA was not the only research method, but also can help customers to distinguish what is the factors of products, services or sells; furthermore, IPA is a good management tool for receiving advantages and increasing market opportunities (Chapman, 1993; Cheron et. al., 1989; Raymond & Chu, 2000).

Marr (1986) applied IPA in customer-based quality measurement, to retrieve customers' view of service importance and performance data, and then displayed in importance-performance analysis grid, to help managers to improve service quality of firms. IPA was formed in the four quadrants (Marr, 1986; Martilla & James, 1977), please see figure 1.

1.2.1 Quadrant I, keep up with the good work: customers require high in importance and the service also in high performance, in which mean the execution of the service fulfilled satisfaction.

1.2.2 Quadrant II, concentrate here: customers need high importance in service, but low in performance, thus, the unit has to improve the service to increase customers' satisfaction.

1.2.3 Quadrant III, low priority: customers need the service is low importance, and the unit also does in low performance, in which implies that there is minor pressure for improvement.

1.2.4 Quadrants IV, possible overkill: low importance in the portion, however, the unit has high performance, in which means that the unit offers too much resource in the portion, and the unit should reduce resources in it.

According to IPA four quadrants, the unit managers should focus on quadrant I and II, because those addressed in high importance, representing the voice of customers; in other words, if the unit performed well in those services to satisfy the needs of customers, and they

will be pleased and presented with loyalty. This is the way to assist the firm to run the business sustainably.

Importance	Quadrant II Concentrate here (High Importance/ Low Performance)	Quadrant I Keep up the good work (High Importance/ High Performance)
	Quadrant III Low priority (Low Importance/ Low Performance)	Quadrant IV Possible overkill (Low Importance/ High Performance)
Performance		

Resource: Martilla, J. A. and James, J. C. (1977). Importance - Performance Analysis. *Journal Marketing*, 41(1), 77-79.

Figure 1 Importance-Performance Analysis (IPA)

1.3 Purpose of the research

According to the literature review, service quality is widely used to different fields and also in sport industry; for example, marathon from Lu and Chen (2007); Chung (2008) in National Universidad Sports Games; Chen, Chang and Tai (2009) sport center; those researches used the feelings of participants after experiences. The review of iiteratures found that IPA was seldom applied for service quality in sport competition; importance is addressed in the thought of participants before participation and satisfaction (performance) after experiences. Thus, the purpose of the study wanted to use IPA in the National University Sport Games, to assist sport event managers to understand the feeling and needs of sport competition participants' views of service quality attributes, in order to help managers to plan the management strategies to improve sport games service quality.

2. Method

2.1 Sample

The sample was selected from participants of the 2013 National University Sport Games, 400 copies of questionnaires handed out, with 308 samples were valid, and the retrieve rate was 77%.

2.2 Instrument

The questionnaires with 32 service questions were formed according to Ko and Pastore (2005), Chung (2008), and also depend on the situation of National University Sport Games with the 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree).

2.3 Data analyses

SPSS 20.0 for Windows was applied for descriptive statistics, item analysis, factor reductions, reliability and validity, pair t-test.

2.3.1. Item analysis

Item and total correlation and t-test were used for item analysis, service quality survey t-test of importance ranged from 9.38~19.69 with $p < .05$ significant level; in addition, item and total correlation range between 0.60~0.82; while service quality survey t-test of performance ranged from 8.69~13.89 with $p < .05$ significant level; in addition, item and total correlation range between 0.60~0.86; in which all items were higher than 0.3, those indicated that all items had fulfilled the discriminative power.

2.3.2 Factor analysis

Thirty two questions of service quality were undertaken for factor reduction, KMO value of 0.959 and Bartlett value of 7894.817 and significant level of .000, and extract eigenvalue higher than 1 with varimax method and factor loading above 0.4. There were four factors in which named as "facility and environment, interpersonal interaction, competition planning, and staffs," and the cumulative variance was 65.34%.

2.3.3 Reliability and validity analyses

Cranbach's α was used for test the reliability. Four factors of service quality showed that each Cranbach's α were "facility and environment" 0.909, "interpersonal interaction" 0.936, "competition planning" 0.892, and "staffs" 0.919, total scale of Cranbach's α 0.969; please see Table 1.

To test the validity of service quality of National Sport Games were consulting from Ko and Pastore (2005), and Chung (2008); therefore, the questionnaires had content validity. Furthermore, cumulative variance of service quality 65.34%, in which meant the questionnaire had construct validity.

Table 1 Factor analysis of service quality in University Sport Games

Item Content	F1 Facility & Environ ment	F2 Interperso nal Interaction	F3 Competit ion Planning	F4 Staffs
29. The games provide safety plan				
27. The games provide good facilities				
28. The games provide good equipment				
30. The games provide good facility directory				
26. The games provide good atmosphere				
32. The games provide service center (water supply, medical station, rest area etc.)	.762			
31. The games provide clean facilities	.744			
23. Attend the games can interact with others	.720	.794		
24. Attend the games can improve the relationship with other participants	.692	.792		
22. Attend the games, help me to enhance social association	.680	.752		
25. Attend the games, help me to improve personal fulfillment	.590	.692		
20. Attend the games will make me happy	.511	.607		
21. I like to participate this sport games		.580		
18. After participation, help me to improve sport skill		.571		
19. After participation, help me to improve sport knowledge		.559		
17. Attend the games, can help me		.533	.739	
			.703	
			.672	
			.617	
			.595	

to improve personal fitness					.562
3. Competition Arrangement is proper					.484
1. Hosting dates are appropriate					
2. Mufti-Events offered for selection					.725
5. Competition Information is easy to reach					.677
4. Registration is very convenience					.676
9. Non-competition programs are amazing					.671
6. Competition event attracts me to participate					.516
14. Staffs aggressively ask participants' demand					.503
15. Staffs can solve the problem successfully					.474
13. Friendly service staffs					.466
12. Accurate performance by official and judges					.410
11. Professional officials and judges					
8. Information update quickly and accurately					
7. Easy to contact the host					
10. Offered complete information					
16. Staffs can provide completely instructions					
Eigenvalue	16.59	1.67	1.43	1.22	
% variance			51.85	5.23	
4.45 3.80					
% cumulation			51.85	57.08	
61.53 65.34					
Cronbach's α	.909	.936	.892	.919	
Total scale Cronbach's α	.969				

3. Result

3.1 Participant profile

The results of demographic data were: 194 males (63%) and 114 females (37%); participation division were: 201 in open division (65.3%) and 102 in regular division (33.1%).

3.2 Importance and performance analysis

In the importance section, according the average of each question, ranking the top three were, "the games provide service center (water supply, medical station, rest area etc.)" was 4.21 placed the first; "professional officials and judges" was 4.19 in second; "the games provide clean facilities" placed third with 4.16. In the mean while ranking lowest average was: "non-competition programs are amazing" with 3.75, "easy to contact the host" was 3.78, and multi-events offered for selection" was 3.87.

In the performance section, according the average of each question, ranking the top three were, "I like to participate this sport game" was 3.84 placed the first; "after participation, help me to improve sport skill" was 3.80 in second; "after participation, help me to improve sport knowledge" placed third with 3.79. In the mean while ranking lowest average was: "hosting dates are appropriate" were 3.12, "competition arrangement is proper" was 3.30, and non-competition programs are amazing" were 3.42.

3.3 Differences in importance and performance analysis for service quality in University Sport Games

Pair t-test was used for importance before participation, and performance after experiences, please see Table 2. All questions displayed significant level of differences. The most differences was "hosting dates are appropriate" with 0.78, "competition Arrangement is proper" with 0.68, and "the games provide clean facilities" with 0.57.; and the least differences was "attend the games can improve the relationship with other participants" with 0.20, "attend the games can interact with others" with 0.25, and "I like to participate this sport games" with 0.26. Although all items had differences from participants' view of importance and performance from the managerial units, within restrictions of time, budget and human resources, IPA would be the good managerial tool for managers to list of orders to make market strategy for better performance to reach the needs of participants.

Table 2 Pair t-test in importance and performance of service quality in University Sport Games

Question	Importance	Performance	Range	t value	Significant (p value)
1. Hosting dates are appropriate	3.90	3.12	0.78	11.233***	0.000
2. Multi-Events offered for selection	3.87	3.51	0.36	6.724***	0.000
3. Competition Arrangement is proper	3.98	3.30	0.68	10.446***	0.000
4. Registration is very convenience	3.89	3.59	0.30	5.780***	0.000
5. Competition Information is easy to reach	3.98	3.51	0.47	8.044***	0.000
6. Competition event attracts me to participate	4.06	3.71	0.35	6.585***	0.000
7. Easy to contact the host	3.78	3.45	0.33	5.923***	0.000
8. Information update quickly and accurately	4.00	3.60	0.40	7.115***	0.000
9. Non-competition programs are amazing	3.73	3.42	0.31	5.344***	0.000
10. Offered complete information	3.95	3.45	0.50	8.633***	0.000
11. Professional officials and judges	4.19	3.75	0.44	7.413***	0.000
12. Accurate performance by official and judges	4.15	3.70	0.45	7.310***	0.000
13. Friendly service staffs	4.12	3.72	0.40	6.405***	0.000
14. Staffs aggressively ask participants' demand	4.02	3.50	0.52	8.509***	0.000
15. Staffs can solve the problem successfully	4.03	3.61	0.42	7.132***	0.000
16. Staffs can provide completely instructions	3.94	3.54	0.40	7.131***	0.000
17. Attend the games, can help me to improve personal fitness	3.96	3.66	0.30	5.636***	0.000
18. After participation, help me to improve sport skill	4.08	3.80	0.28	5.187***	0.000
19. After participation, help me to improve sport knowledge	4.11	3.79	0.32	6.184***	0.000

20. Attend the games will make me happy	4.14	3.70	0.44	7.408***	0.000
21. I like to participate this sport games	4.10	3.84	0.26	4.658***	0.000
22. Attend the games, help me to enhance social association	3.99	3.69	0.30	5.576***	0.000
23. Attend the games can interact with others	3.99	3.74	0.25	4.509***	0.000
24. Attend the games can improve the relationship with other participants	3.97	3.77	0.20	3.757***	0.000
25. Attend the games, help me to improve personal fulfillment	4.09	3.67	0.42	7.111***	0.000
26. The games provide good atmosphere	4.08	3.68	0.40	7.648***	0.000
27. The games provide good facilities	4.11	3.58	0.53	9.002***	0.000
28. The games provide good equipment	4.12	3.63	0.49	8.834***	0.000
29. The games provide safety plan	4.10	3.59	0.51	8.804***	0.000
30. The games provide good facility directory	4.08	3.53	0.55	8.816***	0.000
31. The games provide clean facilities	4.16	3.59	0.57	9.064***	0.000
32. The games provide service center (water supply, medical station, rest area etc.)	4.21	3.65	0.56	8.532***	0.000

***p<.001 , **p<.01 , *p<.05

3.4 Importance and performance Analysis

IPA was used to unfold of each question average with overall average that will fall into which quadrant to offer the suggestions for managerial unit to improve its service quality (Hollenhorst, Olson, & Fortney, 1992). The average of importance and performance were 4.03 and 3.61 respectively. The figure of IPA was importance as x-axis, and performance as y-axis; and those two averages were the origin point, please see figure 2. The result of the researched indicated that there were 13 items in quadrant I, in which meant that both participants rank in high importance and the management unit also did in high performance, thus the unit should keep up those good service; 4 items were in quadrant II, participants

required high importance, but the management did the performance low, therefore, the management unit should concentrate in those services for improvement; 11 items were in quadrant III, both participants asked for low importance, the management unit performance also low, the unit can do those service without much pressure; 4 items were in quadrant IV, participants replied with low importance, while high in performance from the management unit, thus, the unit should reduce resources for those scrvices.

Importance Average 4.03	<p>II Concentrate Here (High importance/ Low performance)</p> <p>Q27 (4.11 ; 3.58); Q29 (4.10 ; 3.59) Q30 (4.08 ; 3.53); Q31 (4.16 ; 3.59)</p>	<p>I Keep up the good work (High importance/ High performance)</p> <p>Q6 (4.06 ; 3.71); Q11 (4.19 ; 3.75) Q12 (4.15 ; 3.70); Q13(4.12 ; 3.72) Q15 (4.03 ; 3.61); Q18 (4.08 ; 3.80) Q19 (4.11 ; 3.79); Q20 (4.14 ; 3.70) Q21 (4.10 ; 3.84); Q25 (4.09 ; 3.67) Q26 (4.08 ; 3.68); Q28 (4.12 ; 3.63) Q31 (4.21 ; 3.65)</p>
	<p>III Low priority (Low importance/ Low performance)</p> <p>Q1 (3.90 ; 3.12); Q2 (3.87 ; 3.51) Q3(3.98 ; 3.30); Q4 (3.89 ; 3.59) Q5 (3.98 ; 3.51); Q7 (3.78 ; 3.45) Q8 (4.00 ; 3.60); Q9 (3.73 ; 3.42) Q10 (3.95 ; 3.45); Q14 (4.02 ; 3.50) Q16 (3.94 ; 3.54)</p>	<p>IV Possible overkill (Low importance/ Low performance)</p> <p>Q17 (3.96 ; 3.66); Q22 (3.99 ; 3.69) Q23 (3.99 ; 3.74); Q24 (3.97 ; 3.77)</p>

Performance Average 3.61

Figure 3 IPA of Service Quality in University Sport Games

4. Discussion And Conclusion

Within the certain amount of budget and efficiency of human resource, IPA was applied for the managerial unit to provide a proper decision and strategy (Chapman, 1993; Cheron et. al., 1989; Raymond & Chu, 2000; Martilla & James, 1977). Questions in the Quadrant I, such as “competition event attracts me to participate”, “professional officials and judges”, “accurate performance by official and judges”, “friendly service staffs”, and so on, were the strengths of the unit and should keep up the good work. There were four questions dropped in the

quadrant II, for instance, “the games provide good facilities, safety plan, good facility directory, and clean facilities”, those must be concentrate for improving the service quality of Sport Games, in order for athletes to improve outcome in the competition. Quadrant III was low priority and quadrant IV was possible overkill, thus, and the unit did not need to pay much attention in these questions, just fulfilled the basic demand of the games.

According to the results and discussion of the research, suggestions were offered for further researches. Due to the limitation of human resource, budget and time, the research can only provide the management units some comments and suggestions for further improvement; however, the results could not offer to other sport events. Therefore, the author recommend that further researches can do researches in different sport events, such as National Sport Games, National Junior and High School Sport Games, and ball games (ex: volleyball, basketball, etc.) to understand participants’ needs to enhance service quality.

Furthermore, IPA can combine with Kano model and QFD (Quality Function Deployment) to discuss the service quality, in order to provide better strategy for managers to improve sport events service quality.

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Balanced Scorecard to Evaluate the Efficiency of Enterprises Has Led up to ERP: A Case Study of Taiwans Listed Steel Companies

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Abstract

Recently, business face a lot of challenges, including threaten of competitors, increasing market share, higher and higher customer expected value, etc. These pressures force business to take more powerful reactions, like to cost down the supply chain, slash stock, shorten manufacturing time, increase product category, promise the lead-time, provide better customer service, continue improving product quality, and coordinate globalize service efficiently. Hence, how to integrate ERP systems inner business has become the essential tool for business to face the variable world.

Because the lead-in process of ERP system is very complicated, has high risk, and has unobvious benefits; how to manage it and do justice to it after lead-in is the most important job for business. However, "no measure is no managed". Before lead-in and manage ERP system, business's front burner is to measure the benefits.

This research is based on four dimensions (finance, customer, company internal process, and learn-growth) of balanced scorecard (Kaplan, R.S, and Norton, D. P.) to make "performance indicators" evaluation by doing questionnaire analysis against company vision, blueprint, and mission. And the result of analysis will become concrete conclusions and suggestions to specific company performance indicators by carefully studying dimensional differences and impacts. Potential factors of 4 dimensions are extracted from factor analysis ; adopting individual variables against dimensional factors with MANOVA to testify levels differences in case company ; in probing into dimensional interaction, ANOVA will be employed progressively as examining dimensional interaction. Finally, the result is hereby presented with concrete conclusion and remarks to formulate performance evaluation indicators against case company.

Keyword: ERP, Balanced Scorecard, Efficiency Assessment

1. Introduction

In recent years, with the gradual increase in Taiwanese companies, and enterprises continue to have the relocation. Taiwanese companies operating throughout has been watered down, in this Taiwanese enterprises and employment environment of increasingly complex situations, how to improve their overall performance and effective corporate resources (budget and manpower) to make the best use treatment has become today important issues faced by Taiwanese companies.

Recently, business face a lot of challenges, including threaten of competitors, increasing market share, higher and higher customer expected value, etc. These pressures force business to take more powerful reactions, like to cost down the supply chain, slash stock, shorten manufacturing time, increase product category, promise the lead-time, provide better customer service, continue improving product quality, and coordinate globalize service efficiently. Hence, how to integrate ERP systems inner business has become the essential tool for business to face the variable world.

Because the lead-in process of ERP system is very complicated, has high risk, and has unobvious benefits; how to manage it and do justice to it after lead-in is the most important job for business. However, "no measure is no managed". Before lead-in and manage ERP system, business's front burner is to measure the benefits.

Therefore, this research that hopes to collect relevant literature by indicators of past performance evaluation to collate and use the Balanced Scorecard to design a set of objective and measurable indicators of cases through the ERP system performance verification procedures, and provide case companies are more stringent proper performance evaluation management decisions.

1.1 Purpose Of The Research

This study investigates how ERP systems affect organizational performance over time, within selected Taiwan's listed steel companies. Focused on the Balanced Scorecard framework to assess the case study company performance evaluation of, sort through the relevant research literature, establish research framework and research methods. BSC choose to take the applicable index, made applicable to the performance of the company into ERP systems in case the reference measure through.

Finally, the result is hereby presented with concrete conclusion and remarks to formulate performance evaluation indicators against case company.

2. Literature Review

The purpose of this research is to collect, collate and summarizes the relevant literature in the past performance evaluation indicators, and taking advantage of the Balanced Scorecard

concept of financial and non-financial side surface performance, build a case can be verified through the program, complete, objective quantifiable, as a business in the performance of ERP-systems after the measure.

2.1 Enterprise resource planning (ERP) systems

ERP systems began to evolve in the 1960s when customized software packages that focused on inventory control were introduced to manufacturing organizations. During the 1970s, the focus shifted to developing information systems to plan and control manufacturing. As information technology advances, businesses can use have different variations. An ability to integrate all enterprise management system to solve a large number of complex transactions arising from the information on corporate operations, providing integrated and timely information to support business operations and information systems for decision-making, is the Enterprise Resource Planning.

According to [1] ERP systems Evolution classified as follows:

- (1) Material Requirements Planning (MRP I) phase (1970-1980)
- (2) Manufacturing Resource Planning (MRP II) phase (1980s-90s)
- (3) Computer integrated manufacturing planning (CIM) stage (early 1990s)
- (4) Enterprise Resource Planning (ERP) phase (1990-2000 years)
- (5) Future trends in enterprise resource planning system

The basic function of ERP system is to provide all the features associated with the daily operations of the enterprise, such as financial analysis, accounts receivable, cost accounting, materials and inventory management, procurement systems, logistics systems, marketing systems, customer service systems, payroll and personnel management system etc.

2.2 Reasons for ERP

The case of companies, into ERP system is part of a very significant investment, the reason will proceed with the vote Capital cases, companies have diversified import reasons, scholars and institutions enterprises import EPR system. The reason the system also has a different view, as described in Table 1

Table1 Reasons for finishing into ERP business table

Scholar or institution	Importing reason	
Jeanne W.Ross[4]	solve the Y2K problem demand for integrated systems reduce costs	merger inefficient processes shorten the order-to-delivery cycle Real-time information to enhance the quality of decision-making
Bingi , Sharma and Godla [5]	reach a global logistics management close connection with the functions of information systems solve the Y2K problem Business Process Reengineering customer requirements Replace the old system	reduce operating costs enhance operational efficiency transparent rationality of the job enhance the quality of decision-making and management efficiency common platform
Brown, Vessey , and Powell[6]	reach a global logistics management Business Process Reengineering replace the old system	enhance operational efficiency transparent rationality of the job Common platform
Mabert, Soni, and Venkataraman [7]	reach a global logistics management Closely integrated functional information system solve the Y2K problem Business Process Reengineering	customer requirements replace the old system common platform
Stefanou[8]	close connection with the functions of information systems customer requirements	reduce operating costs
Reinhard and Berga Maschi[9]	reach a global logistics management close connection with the functions of information systems solve the Y2K problem replace the old system reduce operating costs	enhance operational efficiency transparent rationality of the job enhance the quality of decision-making and management efficiency

Y-F,Wang[10]	reach a global logistics management close connection with the functions of information systems Business Process Reengineering enhance operational efficiency transparent rationality of the job enhance the quality of decision-making and management efficiency	Information System Integration favorable career after merger company fully computerized / standardized strengthen management control operational information company's overall resource utilization optimized improve corporate culture
Y-T, Zhan[11]	reach a global logistics management close connection with the functions of information systems	reduce operating costs enhance the corporate image

2.3 Summary of literature findings

ERP is not really powerful features, companies can bring considerable benefit? On this issue, the relevant literature has mentioned many companies in the ERP system after the import, you can clearly feel it benefits such as easy access to information across the enterprise and enhance interaction, workflow integration, the availability of information and quality improvement [12].

According to Deloitte's research, ERP benefits have reduced inventory, streamline manpower, increase production, improve order management, reduce IT and procurement costs, improve cash flow management, increase revenues, reduce transportation and logistics costs, reduce system maintenance requirements, improve timely delivery ratio, increase the visibility of corporate information, providing newer or better processes, improve time to respond to customer needs, reduce costs expected outside the close connection between systems, standardized computing platforms, increase flexibility, company resources share and solve the Y2K problem, improve business performance[13].

3 Research Methodology

3.1 Research problem

Because the purpose of this paper is to study by summarizing the literature of the past performance evaluation index, and use of the Balanced Scorecard to construct a complete, objective, quantifiable, and measurable performance indicators via the ERP system to import the cases verification procedures . The above performance characteristics are classified according to their nature and the four facets of the Balanced Scorecard, that financial institutions face, customer facet facet internal processes, learning and growth facets; in

locating various benefits associated with after the performance metrics, use paid expert questionnaires, an important indicator of screening by an expert group, sorting out the key performance metrics.

3.2 Research objectives

In this study, a sample case study company, according to research motivation, purpose, and related documents, the construction of a balanced scorecard to measure corporate performance indicators of cases, the implementation of the survey through mid-caseworkers company, and by statistical analysis the indicators used to examine whether a balanced scorecard of credibility, but also to understand the importance of the survey methods and the degree of influence of each indicator, the final data will be analyzed, conclusions and recommendations given to the company for reference use cases, this study architecture in Fig.1.

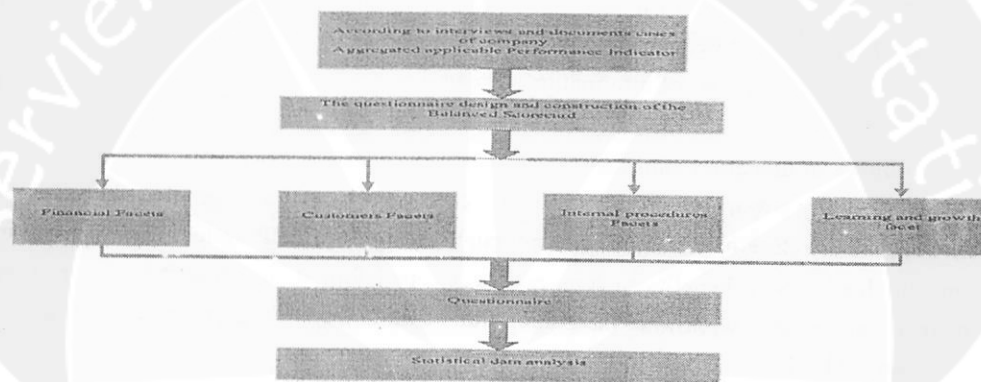


Fig.1. Research Architecture

3.3 Case definition of the company's profit targets

In this study, the definition of the selected performance metrics, deliberate table above proposal, based on in-depth interviews and case management company personnel and related personnel, the modifications will be discussed by experts in the questionnaire, the Department of the whole out of this study to assess the performance metrics. Finally, a questionnaire survey, at the four facets of the Balanced Scorecard, trying to filter out every facet, the most representative of the performance and feasibility of the measure.

3.4 analysis methods

In this study, the Chinese version of SPSS 12.0 statistical software to analyze the effective implementation of invalid questionnaires were coded, will be described statistical analysis, factor analysis and reliability testing, analysis of variance and regression analysis.

4 Research Results: Structured Interviews

This study questionnaires were issued, in order for caseworkers company, then in March ninety seven census methods, the questionnaires sent, 100 were issued were returned 89 questionnaires, which count 86 valid questionnaires, the effective questionnaires recovery was 86%.

For the recovery of valid questionnaires, each facet of this study use factor analysis and reliability and validity testing, extraction potential factors, and through the reliability and validity checks to confirm the rationality and validity of various factors.

Section for valid questionnaires to the respondents of the basic information is divided into: "Duty", "service", "sex", "age", "education", "years of service", "participation in performance measurement," "The purpose of performance measurement, "" based on performance indicators "are nine.

Descriptive statistical analysis of performance measures

Descriptive statistical analysis (a) each facet of the overall performance metrics

From Table 2, each facet of the overall measure in terms of importance, "learning and growth facet" highest average, in order, is "customer facet", "Financial institutions face," and "internal processes Facets "subject to a minimum degree of attention. "Learning and growth facet", the company accepted in the case of singular company in 2000 and 6-Sigma Manufacturing ad hoc training, and thus strengthen the company's constitution, as the company insists the cases significantly paid off; the "customer facet" Case Company training a group of professional promotion team, complete with hundreds of improvements project activities, improve customer satisfaction; "Financial institutions face" stage besides continuing to reduce the cost of management and control, financial operations will be more cautious in the final at the "internal process facets "internal process improvement and inventory reduction, reducing the number of poor quality, mid-level staff compared to its importance can't understand this facet lowest averages.

From Table 3, each facet satisfaction metrics in "learning and growth facet" highest average sequentially as "internal processes facet", "Financial institutions face," and "customer facet" subject to a minimum degree of attention.

Table 2 Each facet of cases companies measure the degree of importance to sort table

Performance measurement facets	Mean	Standard deviation	Maximum	Min	Sequence
Learning and growth facet	3.9612	0.52373	5	3	1
Customers Facets	3.9288	0.57444	5	2	2
Financial Facets	3.9196	0.45669	5	3	3
Internal dimensions	3.8669	0.53115	5	2	4

Table 3 Case Company each facet satisfaction metrics sort table

Performance measurement facets	Mean	Standard deviation	Maximum	Min	Sequence
Learning and growth facet	3.4302	0.52795	5	2	1
Internal dimensions	3.4160	0.51813	5	2	2
Financial Facets	3.4031	0.47843	5	3	3
Customers Facets	3.3474	0.60646	5	2	4

Descriptive statistical analysis of the various facets of performance measures

Have the four facets of the indicators do facet of the sorting and analysis, financial indicators facet importance degree, as shown in Table 4 and 5 first. The highest average for the previous three indicators in order, is "to improve the new product gross margin", "procurement costs", "improve product sales ratio," the most neglected of the index for "return products to reduce the amount of loss," "improve cash management ", " reduce IT costs. "New product promotion, customers can check online or case during unsolicited sales company / product rankings, product promotion information for products and new products have increased dramatically. To "reduce IT spending," because of the cases the company has developed a comprehensive supply chain management system is connected upstream and downstream firms, resulting in a lower degree of importance on. Financial facet satisfaction "improve inventory turnover rate," "improve product sales ratio," "reduce finished, semi-finished products, raw material inventory," as the three high priority on the implementation of the project in case the company's business strategy, by data show that in order identify eligible staff; "improve cash management", "reduce the amount of returned goods lost," the existence and importance of the same factors also showed poor satisfaction. Due to cash, part of the management amounts are higher-order executive officers under the jurisdiction of the questionnaire in order to subject the staff is high, so the result is not satisfied with the situation seriously.

Table 4 Cases of the company's overall performance - a measure of financial importance of the facet sort table

Facets	Line item	Performance metrics	Mean	Standard deviation	Maximum	Min	Sequence
Money Business Construct Surface	1	Improve new product gross margins	4.0581	0.69205	5	1	1
	10	Reduce procurement costs	4.0465	0.70138	5	3	2
	2	Improve product sales ratio	4.0233	0.61313	5	2	3
	3	Improve inventory turnover	4.0116	0.65967	5	3	4
	6	Reduce finished, semi-finished products, raw materials inventory	4.0000	0.66863	5	2	5
	8	Accurate real-time financial information	3.9884	0.71116	5	3	6
	5	Improve yields	3.9535	0.63072	5	2	7
	9	Order Process Improvement	3.9186	0.73908	5	1	8
	7	Reduce management and marketing expense ratio	3.9070	0.69668	5	2	9
	4	Reduce the amount of loss to return goods	3.7674	0.82140	5	1	10
	12	Improve cash management	3.6860	0.70730	5	2	11
	11	Reduce IT costs	3.6744	0.81806	5	1	12

Table 5 Cases of the company's overall performance - a measure of financial facet satisfaction ranking table

Facets	Line item	Performance metrics	Mean	Standard deviation	Maximum	Min	Sequence
Money Business Construct Surface	3	Improve inventory turnover	3.4767	0.58865	5	2	1
	2	Improve product sales ratio	3.4767	0.66380	5	2	2
	6	Reduce finished, semi-finished products, raw materials inventory	3.4651	0.69786	5	1	3
	8	Accurate real-time financial information	3.4535	0.69717	5	2	4
	5	Improve yields	3.4186	0.69393	5	2	5
	9	Order Process Improvement	3.3953	0.74010	5	1	6
	11	Reduce IT costs	3.3837	0.63558	5	2	7
	7	Reduce management and marketing expense ratio	3.3837	0.63558	5	2	8
	1	Improve new product gross margins	3.3837	0.72223	5	1	9
	12	Improve cash management	3.3605	0.64921	5	2	10
	10	Reduce purchase costs change	3.3488	0.71566	5	1	11
	4	Reduce the amount of loss to return goods	3.2907	0.64837	5	1	12

5. Conclusions

This study analyzes the results of the fourth chapter proceeds to explore the literature and classify the performance metrics, the following conclusions:

First, measure the overall performance of the various facets of the importance of the indicators in order, is "learning and growth facet", "customer facet", "Financial institutions

face", "facet internal processes"; the sequence of satisfaction "learning and growth facet", "internal procedures facet", "financial institutions face", "customer facets." The results show that, in the order of staff on performance indicators expectations tend to grow self-learning and customer facet of attention towards both professional duties and customer satisfaction continued diligent. The result of learning and growth surface and surface showed high degree of attention and high attention to the satisfaction of the customer side and just pay attention to the degree of satisfaction of the contrary, the case company on the allocation of resources should be invested in order to complete the staff of human resources planning, train services more good team, to achieve customer satisfaction.

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ISBSS-4599

The Influence of Organizational Social Presence in Facebook on Relational Outcomes

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Abstract

Considering the expansion of organizational social media use and its practical implications in public relations studies and practices, this study aims to explore the social presence effects of an organization on relational outcomes (organization-public relationship and organizational reputation) in social media platforms. To examine these hypotheses, the data were collected through online survey by 374 Facebook users who were followers to a real company in Korea. The findings show that the perceptions of publics (Facebook users) on the organizational social presence are positively associated with the organization-public relationships and organizational reputation. Also the organization-public relationships have partial mediation effects between the social presence and organizational reputation variables. In conclusion, the results demonstrate that the organization's social presence in social media has a significant meaning as a factor for contributing public relational outcomes and it plays an important role to the public, psychologically, to develop relationships with the organization. Detailed guidelines for managing organizational social media use are discussed.

Keyword: Social Media, Organization, Social Presence, Relationships, Reputation

Poster Sessions—July 21

Poster Session 2

Psychology / Economics / Finance & Accounting /

Marketing / Culture / Sociology / Education 1 /

Management 2

B1, Renaissance Sapporo Hotel
2015/07/21 Tuesday 09:30-10:30

ISBSS-4469

Trust and Risk Perceptions of Science and Technology: Comparison to Japan and S.Korea

Jaesun Wang | *Honam University*

Han Hu Shin | *Honam University*

Cheon Ju Park | *Honam University*

Hyun Cheol Kim | *Honam University*

ISBSS-4561

Effects of Display Type and Ambient Illuminance on Users' Operating Performance

An-Hsiang Wang | *National Chung Cheng University*

Kuan-Chun Lin | *National Chung Cheng University*

ISBSS-4623

Facebook Involvement and Social Capital: Online and Offline

Sen-Chi Yu | *National Taichung University of Education*

Lung-Ching Hsieh | *Taichung Municipal Chongde Junior High School*

Wen-Ping Lan | *National Taichung University of Education*

BREFM-22277

Does Directors' and Officers' Liability Insurance Affect Firms' Investment Decisions?

Hsinyi Chi | *National Chung Hsing University*

Tzu-Ching Weng | *Feng Chia University*

BREFM-22851

Fund Managers' WeChat Behavior, IPO Underpricing, and Earnings Volatility

Qingfeng Cai | *Xiamen University*

Junfeng Guo | *Xiamen University*

Shuhai Yi | *Xiamen University*

Ying Chen | *Xiamen University*

BREFM-22391

Credit Contagion and Counterparties Risk

Shu Ling Yang | *National Taichung University of Science and Technology*

Hsien Yi Chen | *Asia University*

Chong Chuo Chang | *Asia University*

BREFM-22372

Integrating Macroeconomics and Environmental Features for Real Estate Pricing Function

Jieh-Haur Chen | *National Central University*

Anneurin Bevan | *National Central University*

Chien-Hung Chao | *National Central University*

BREFM-22424

Does Prior Gain Promote Lotto Sales

Shih-Chin Lee | *Chihlee Institute of Technology*

BREFM-22417

The Fair Cost of Violation of the Country-of-Origin Labeling in Korea

Sung-Bum Yang | *Dankook University*

Seung-Ryong Yang | *Korea University*

BREFM-22379

A Study on Marketing Strategies of the Conventional Industries in Taiwan

Shin-Chyang Lee | *Chihlee Institute of Technology*

BREFM-22554

Perceived Intellectual Value and Perceived Sensitive Value on Cosmetic Websites

Kuang-Wen Wu | *Feng Chia University*

ISBSS-4600

Organization's Responsibility as a Contingency Factor Affecting Health Journalists' Perceptions of Conflict Issues

JiYeon Jeong | *Hongik University*

ISBSS-4601

A Scale for the Evaluation of Honorary Ambassadors

JiYeon Jeong | *Hongik University*

Sungwook Hwang | *Pusan National University*

ISBSS-4566

A Morphological Analysis of Joss Paper Image in Taiwan - A Case Study of Fu Lu Shou

Ching Yang | *National Yunlin University of Science & Technology*

Tsai-Ching Tsai | *Ministry of Justice*

Ming-Chuen Chuang | *National Chiao Tung University*

ISBSS-4424

Factor Affecting Critical Success Factors in Sports

Syahril Azhar Mohd Sharif | *Malaysia Japan Higher Education Program*

Siti Aishah Wahabb | *Universiti Teknologi MARA*

Sohaimi Zakaria | *Universiti Teknologi MARA*

ISBSS-4307

Planning a Design Course for Play Experience and Fab Lab

Chien-Kuo Teng | *National Chiao Tung University*

Ming-Chuen Chuang | *National Chiao Tung University*

Chun-Cheng Hsu | *National Chiao Tung University*

ISBSS-4320

Affecting Factors of Health-Related Physical Fitness: Knowledge, Attitude, Self-Efficacy, Exercise Habits, and Weight Status among Middle School Students in Taiwan

Lee Yu Lin | *Tamkang University*

ISBSS-4342

Producing a Brief Introduction Film for Department on Remote-Islands University – A Student-Oriented View

Su-Chang Chen | *National Penghu University of Science and Technology*

Sin-Ting Jeng | *National Penghu University of Science and Technology*

Kuang-Hui Li | *National Penghu University of Science and Technology*

Ji-Rong Huang | *National Penghu University of Science and Technology*

Yu-Tong Chen | *National Penghu University of Science and Technology*

Pei-Jyun Lu | *National Penghu University of Science and Technology*

ISBSS-4345

Investigation on the Features and Using of Elementary Mathematics Curriculum and Their Impacts on Students' Learning Performance

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Chih-Lung Lin | *National Pingtung University*

Hsiao-Ting Lee | *National Pingtung University*

ISBSS-4365

The Saint Ludens of Baby

Chen Jui Chen | *National Taiwan Normal University*

Chuan Ling Chang | *National Taiwan Normal University*

ISBSS-4419

Educational Values of Organic Farming Curriculum: A Case Study of Elementary and Junior High School of Bliss and Wisdom Education Park in Taiwan

Mei Fang Chen | *National Yunlin University of Science and Technology*

Hui Chen Lee | *National Yunlin University of Science and Technology*

ISBSS-4589

Public Understanding of Emerging Technology—A Example of Genetically Modified Technology

Chen Chia-Hao | *National Dong Hwa University*

Ku Chih-Hsiung | *National Dong Hwa University*

ISBSS-4603

Strategy to Gauge the Effectiveness of Methods for Determining Student Reading Levels (RL)

Kurt W. Ackermann | *Hokusei Gakuen University Junior College*

ISBSS-4379

An Investigation of the Imagination Rubric with Delphi Technique

Chun-Wen Teng | *Feng Chia University*

Ching-Yi Lee | *Feng Chia University*

Chia-Cheng Chen | *National Taiwan University of Arts*

Hoang-Jyh Leu | *Feng Chia University*

Hsin-Hui Wu | *Feng Chia University*

ISBSS-4593

The Training Program of Leisure Instructor in Taiwan

Chi Chang | *National Taiwan Normal University*

Xin-Jie Huang | *National Taiwan Normal University*

Chia-Yi Li | *National Taiwan Normal University*

ISBSS-4483

Social Value for Sport Participation in Chinese Society

Chih-Fu Cheng | *National Taiwan Normal University*

Chi Chang | *National Taiwan Normal University*

Tao-Tien Hsiung | *National Taiwan Normal University*

Xin-Jie Huang | *National Taiwan Normal University*

ISBSS-4528

The Study of Authoritarian Leadership, Leader Trust, and Team Commitment of Boxing Coach in Taiwan

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ISBSS-4469
**Trust and Risk Perceptions of Science and Technology: Comparison to
Japan and S.Korea**

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This study analyzes the relationships between perceived risk of science and technology(S&T) and trust in Japanese and Korean. As S&T have been developed, people concern with causes and results which S&T bring to environmental risk such as nuclear power, biotechnology and climate change. This research analyzes the impact of trust in perceived risk caused by S&T. We divide the trust into two types such as social trust and government trust and analyze differentiated impact of each trust on perceived risk of S&T. Through this analysis, we attempt to examine how much role of government and socio-cultural climate are important factor to alleviate peoples' anxiety over the risk caused by S&T. This study uses to ISSP(International Social Science Program) 2010 'Environment III' data.

Key Words: Government Trust, Social Trust, Risk perception, Science and technology

ISBSS-4561
Effects of Display Type and Ambient Illuminance on Users' Operating Performance

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Abstract

This study investigated the effects of display type and ambient illuminance on users' operating performance. The results for this study showed that participants who used e-paper display under black-and-white setting, e-paper display under color setting and transmissive LED did not perform significantly different operating performance. However, participants performed the worst performance at 50 lx than at 500, 6,000 and 12,000 lx settings. In addition, the interaction between display type and illuminance also had a significant effect on users' operating performance. When the participants used transmissive LED, the different illuminance settings did not cause users' significantly different operating performance. Nevertheless, participants performed the worst performance at 50 lx than at 500, 6,000 and 12,000 lx settings when the participants used the e-paper displays under black-and-white and color settings.

Keyword: operating performance, e-paper display, transmissive LED, illuminance

1. Introduction

The paper investigated the effects of the display type (e-paper display under black-and-white setting, e-paper display under color setting and transmissive LED) and ambient luminance on readers' operating performance. Regarding the users' performance about e-paper, Wang et al. (2008) found that there are no significant differences in participant comprehension for reading different e-book displays when the ambient illuminance was set at 800, 1500, and 2,200 lx. Lee et al. (2011) proposed that ambient illuminance ranging from 700 lx to 1,500 lx enhances performance when using e-paper displays. Wang et al. (2012a) also found that users used a conventional transmissive LCD had substantially higher discrimination performance at 500 lx and 12,000 lx than at 50 lx. In addition, users who used the color e-paper display had the highest discrimination performance at 12,000 lx, followed by 500 lx, with the lowest

performance at 50 lx. Wang et al. (2012b) proposed that readers performed the highest performance at high ambient illuminance (500 lx).

2. Method

2.1 Participants

Eighteen participants participated in this experiment. All participants had visual acuity corrected to 0.8 or greater with regular color vision.

2.2 Apparatus and experimental materials

The standard pseudo isochromatic chart was used to test the participants' color vision, and a TES-1334 light meter was used to measure ambient illuminance. The three types of displays used in this study were e-paper display under black-and-white setting, e-paper display under color setting, and transmissive LED.

2.3 Experimental design

Two independent variables (display type and ambient luminance) were analyzed in this study. In addition, display type and ambient illuminance were treated as within-participant factors. There are $4 \times 4 = 16$ application programs (APP) with pseudo icons were shown in the screen during experiment. The "pseudo icon" means its function is just shown in the central of the icon and it's different from the icons really used in the products in the market.

2.4 Procedure

In order to prevent visual fatigue, participants were asked not to handle any task on screen for an hour before the experiment. Before the beginning of each participant's experiment, one practice were held to let subjects to be familiar with the procedure of experiment.

Participants were asked to click a pseudo icon followed the direction shown at top of the screen within 10 seconds. Consequently, there were totally 16 trials needed to be conducted in the processing of the experiment for each display type. The correct ratio for each display type was collected after participants finished the 16 trials.

3. Result

The results for this study showed that participants who used e-paper display under black-and-white setting, e-paper display under color setting and transmissive LED did not perform significantly different operating performance. However, participants performed the worst performance at 50 lx than at 500, 6,000 and 12,000 lx settings. In addition, the interaction between display type and illuminance also had a significant effect on users' operating performance. When the participants used transmissive LED, the different illuminance settings did not cause users' significantly different operating performance. Nevertheless, participants performed the worst performance at 50 lx than at 500, 6,000 and 12,000 lx settings when the participants used the e-paper displays under black-and-white and color settings.

4. Conclusion

This study investigated the effects of display type and ambient illuminance on the operating performance of participants.

Acknowledgement

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ISBSS-4623

Facebook Involvement and Social Capital: Online and Offline

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Abstract

The purposes of this research are to investigate the relationships among Facebook involvement, social capital, and Internet social capital. Participants consisted of 363 college students from Taiwan. The instruments applied in this study included the Facebook Involvement Scale (FIS), the Social Capital Scale (SCC), and the on-line Social Capital Scale (OSCC). The research data were analyzed through structural equation modeling (SEM). The main results revealed that the correlations of FIS-SCC, FIS-OSCC, and SCC-OSCC were .35, .74, and .50, respectively. These results indicated that the more involvement of Facebook, the more social capital. Besides, online social capital benefit from Facebook more than traditional social capital. Based on the results of this study, some suggestions for practitioners and researchers are recommended.

Keywords: Internet, Facebook involvement, social capital

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BREFM-22277

Does Directors' and Officers' Liability Insurance Affect Firms' Investment Decisions?

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Abstract

We examine how abnormally high level of directors' and officers' (D&O) insurance coverage affects a firm's investment efficiency. Once managers mitigate their personal legal liability through D&O insurance coverage, their behaviors will be more opportunistic. We find that managers are more likely to over-invest when their personal legal liability is covered by abnormally high level of D&O insurance coverage. We also find that over-investing firms with excess D&O insurance coverage appear to have poor investment decisions that result in inferior subsequent performance. We further find that managers with excess D&O insurance coverage tend to over-invest in R&D. Our results are consistent with the argument that the agency conflicts and moral hazard problems are aggravated by excess coverage which provides the directors and managers with more room to pursuit private personal benefits via inefficient investments decisions.

Key words: Directors' and Officers' Insurance Coverage, Over-investment, R&D

1. Introduction

This paper examines whether directors' and officers' (D&O) liability insurance coverage affects firms' investment efficiency. Recent studies demonstrate that D&O insurance provisions provide a company's directors and officers (i.e., managers or insiders) with protection against liability lawsuits stemming from their professional activities on behalf of the business (Chung and Wynn, 2008; Wynn, 2008; Lin et al., 2011). However, the debate on the merits and demerits of legal liability coverage is still open. One view is that legal liability coverage is beneficial to shareholders because D&O insurance coverage is dependent on the scrutiny and approval of insurers and thus plays a monitoring role (Holderness, 1990; Core, 2000). Moreover, D&O insurance provisions can help a firm to attract and maintain competent directors and officers (Bhagat et al., 1987) and may decrease the compensation differential in executive pay (Mayers and Smith, 1982). The other view is that D&O

insurance provisions provide essential layers of protection to a company's directors and officers and therefore lessen the effectiveness of litigation as a monitoring tool (Chalmers et al., 2002; Chung and Wynn, 2008; Wynn, 2008).

While the prevalence of legal liability coverage and the debate about its merits, empirical studies are relatively scarce because of the difficulty in obtaining D&O insurance data at the firm level. These studies primarily focus on the impact of managerial legal liability on a firm's mispricing and disclosure quality

¹ and conclude that managers protected by D&O insurance are acting in accordance with their opportunistic intentions. While most empirical evidence supports that legal liability coverage is associated with managerial opportunism, we still know little about whether managers covered by D&O insurance tend to over-invest for the purpose of their private benefits.

Managerial legal liability coverage is an important corporate governance issue because it insulates directors and officers from potential personal liability and therefore aggravates agency problems and managerial entrenchment. As managers are overly covered by liability coverage, their investment decisions may be prone to depart from the optimal level and they are more likely to undertake risky investment projects (Core, 1997). If firms have higher level of free cash flow or their managerial compensation plans place a heavy emphasis on near-term stock returns, the managers have the incentive to manipulate the market's inferences about firm prospects through observable investment choices (Murphy, 1985; Jensen, 1986; Stulz, 1990; Richardson, 2006; McNichols and Stubben, 2008). The result of this myopic behavior can be over-investment. Higher free cash flow and equity-based executive compensation can provide financial motivation for managers to engage in wasteful expenditure (Jensen, 1986; Stulz, 1990; Richardson, 2006), but those firms which over-invest are more likely to be targets for shareholder lawsuits (McTier and Wald, 2011). Managerial decisions on over-investment have an effect on the firm's litigation risk level. McTier and Wald (2011) suggest that over-investing firms which acquire more and payout less cash are more likely to be sued. Peng and Roell (2008) find that the probability of lawsuit is positively associated with acquisition activities.

¹ For example, Chalmers et al. (2002) demonstrate a negative association between the amount of D&O insurance purchased at the time of IPO and the three-year post-IPO stock returns, suggesting that managers incorporate their private information related to the overpricing of the IPO in D&O insurance purchase decisions. Kim (2006) provides evidence that firms with substantial D&O coverage limit experience a greater likelihood of earnings restatement. Chung and Wynn (2008) suggest that a high level of legal liability coverage is associated with a less conservative financial reporting. Wynn (2008) finds that firms with higher excess liability coverage are less likely to report bad news forecasts, thereby leading to less timely disclosures of bad news.

However, managers may mitigate their personal legal liability against the failure of investment policy through D&O liability insurance. Reduced managers' expected legal liability via D&O insurance may induce moral hazard among directors and officers by shielding them from the discipline of shareholder litigation. Most empirical evidence supports that excess D&O insurance coverage is associated with opportunistic behavior of managers (Chung and Wynn, 2008; Wynn, 2008). Managers who are shield by abnormally high level of managerial liability coverage may engage in excessive investment on self-serving projects so as to obtain their private benefit. We therefore expect that managers are more likely to undertake risky investment projects when their personal legal liability is covered by excess D&O insurance.

Managers are firm's most critical person whose motives and ethical choices have fundamental influence on firms' resources allocation and therefore overall performance. If D&O insurance coverage induces moral hazard and agency problem amongst well-protected managers, managers maximizing their person welfares are inclined to make investments that are not in the best interests of shareholders. Thus, we predict that over-investing firms with excess D&O insurance coverage appear to have poor investment decisions that result in inferior subsequent performance. We conceptually define a firm as investing inefficiently if it undertakes projects with negative net present value and then causes a lower Tobin's Q.

Using mandatory disclosure of D&O insurance data for Taiwanese listed companies, we find that the higher level of managerial liability coverage, as measured by excess D&O insurance coverage, is positively associated with firm's over-investment. The findings suggest that the excess legal liability coverage leads to distortions in corporate investment decision and covered managers are incline to over-invest for the purpose of their private benefits. We also find that over-investing firms whose managers have excess D&O insurance coverage experience significantly poor performance. Further analysis suggests that managers covered by excess D&O insurance tend to makes more R&D investment projects, indicating that those managers may become effectively less risk averse and less likely to reject attractive R&D investment projects. In sum, our results suggest that moral hazard and agency problem resulting from excess managerial liability coverage have a significant impact on managers' over-investment behavior.

Our paper contributes to the literature in at least two ways. First, we find that a positive relationship over-investment and legal liability coverage, as reflected in excess D&O insurance. Prior research (e.g., Masulis et al., 2007; Lin et al., 2011) has been documented that managers who are well protected from shareholder discipline or D&O insurance make poor acquisition decisions, but most of these studies detect this relationship in conjunction with major events such as mergers and acquisitions that are relatively unusual for most corporations. Therefore, we complement this line of research by showing that abnormal liability coverage lead to managerial opportunistic behavior through over-investment

decisions. This result is in line with prior research documents a negative consequence of large D&O insurance coverage. Second, extensive prior research investigates whether D&O insurance policy is associated with firms' mispricing and disclosure behaviors (Chalmers et al., 2002; Wynn, 2008; Chung and Wynn, 2008; Lin et al., 2011), but empirical research of the relationship between managerial legal liability and investment efficiency is lacking. There is much less evidence of the importance of managerial incentives for more routine corporate decisions. To our knowledge, there is no study that examines that effect of managers' excess D&O insurance coverage on a firm's over-investment behavior. Thus, our study provides the first empirical evidence that excess legal liability coverage is related to manager's moral hazard problems and agency conflicts and then leads to inefficient or opportunistic investment decisions.

The rest of the paper is structured as follows. In section 2, we provide institutional background and develop our hypothesis. In section 3, we describe measurements of variables and empirical model for excess D&O insurance coverage and over-investment. In section 4, we present the sample selection process and the results of empirical and various sensitivity tests. The final section provides some concluding remarks.

2. Institutional background and hypothesis development

2.1 Legal liability coverage

As representative of the corporation, directors and officers are liable for their actions in the corporations as well as the corporation's own actions.² Shareholders may sue a corporation for damage and the managers' activities on behalf of the corporation.³ In the recent years, there has been an increasing of litigation exposure for public firms, which caused directors and officers to be more concerned about their lawsuit risk. D&O insurance coverage provides important layers of protection to a company's directors and officers for legal liability because of their professional activities on behalf of the company.

The typical D&O policy contains two parts. One is entity-level coverage, which reimburses the firm when it indemnifies their directors or officers for the payment of a lawsuit. The other is individual-level coverage, which is direct payment to directors and officers when the firms are not able to indemnify them due to financial distress (Core, 1997; Chung and Wynn, 2008).

² Article 23 of the Company Act of Taiwan stipulates that board directors have joint liability with the company to compensate any person (e.g., a board director or officer) who suffers damages or losses resulting from an illegal act that is within the scope of the company's business.

³ Taiwanese Securities and Futures Bureau (TSFB) has promulgated the Securities Investors and Futures Trader Protection Act (SIFTP Act) to protect individual investors' welfare. In 2003, the bureau established the Securities and Futures Investors Protection Center (SFIPC) to implement the Act. Since established, the SFIPC has dealt with 57 class-action cases, and more than 60,300 plaintiffs have required a total compensation amount about \$0.9 billion as of the end of 2008 (SFIPC 2008 annual report). Under the supervision and guidance of the competent authorities, the SFIPC has made significant progress in the fulfillment of class actions and in the protection of shareholders' equity.

Traditionally, coverage is provided as long as the directors or officers have acted honestly and in good faith, and do not violate their fiduciary duty to the shareholders and the firm. D&O insurance policy not only reimburses damages, settlements, judgments, and litigation expenses, but also provides coverage for firms in securities and employment mismanagement claims. However, the policy does not cover liability involving willful misconduct, self-dealing, bad faith, knowing violation of security laws, and dishonesty. Therefore, this has special relevance to publicly listed firms where securities claims can have a significant effect on a firm's finances or even threaten its existence.

D&O insurance coverage has been available in Taiwan since the 1990s. However, due to the increasing number of shareholders' claims against corporations, the TSFB announced a new ruling in 2002: the *Corporate Governance Best-Practice Principles for Listed Companies*. The article 39 and 49 stipulated that a listed company may take out liability insurance for directors and supervisors with respect to their liabilities resulting from the exercise of their duties during their terms of occupancy. The purpose of this announcement was to reduce the risk of material harm arising from the wrongdoing or negligence of a director by spreading the risk among the company and shareholders. The TSFB further required listed firms to disclose available details of the compensation of officers and directors, including information about the firm's D&O insurance policy.

Several studies have argued two competing arguments regarding the role of legal liability coverage in corporate governance: monitoring mechanism and managerial opportunism. Mayers and Smith (1982), Holderness (1990), and O'Sullivan (1997) suggest that D&O insurance acts in a governance role since an insurer entirely inspects the insured, and coverage limits and deductibles exist. However, recent studies document that liability coverage lessens the effectiveness of litigation as a managerial control mechanism by reducing expected personal legal liability. For example, Core (1997) finds that firms with greater inside voting control are more likely to purchase insurance and carry higher limits. Chalmers et al. (2002) provide evidence that there is a negative relation between three-year stock price performance of the firm and the amount of D&O insurance purchased on the IPO date. Wynn (2008) finds that firms with higher excess D&O insurance coverage are less likely to report bad news forecasts. Zou et al. (2008) suggest that D&O insurance may be opportunistically purchased to protect firms' directors and managers against litigation risks arising from the expropriation of outside (minority) shareholders.

Prior research has been conducted to test whether well protected directors and officers engage in mispricing behaviors and opportunistic financial reporting decisions. Chalmers et al. (2002) suggest that managers covered by D&O insurance tend to incorporate their private information related to the overpricing of the IPO. Wynn (2008) documents that the liability coverage, proxied by a firm's excess cash holding, appears to affect a firm's disclosure of bad news which making less frequent and less timely bad news forecast in US-listed Canadian

companies. Chung and Wynn (2008) find that higher D&O insurance coverage will lead to less conservative earnings. Although research on the role of liability coverage is mixed, recent empirical studies appear to support the argument that the legal liability coverage results in managerial opportunism.

2.2 Legal liability coverage and investment decision

The original intention of liability coverage is to protect directors and officers from lawsuits when they are acting in good faith, but it shields directors and officers from the discipline of shareholder litigation and then cause agency problem and moral hazard. D&O insurance coverage may change the liability risk profile of directors and managers and thereby affect their incentives in corporate decisions. It has been suggested that D&O liability insurance coverage encourages managers or allows them to act opportunistically (Core, 1997; Baker and Griffith, 2010). Hence, managers may work recklessly, negligently, or engage in opportunistic behaviors that benefit themselves at the expense of shareholders. Existing empirical studies have suggested that insured managers may reduce financial reporting and disclosure quality due to their opportunistic behaviors (e.g., Chung and Wynn, 2008; Wynn, 2008).

As D&O insurance coverage is exerted to protect company directors and managers against the litigation risks arising from the expropriation of outside investors, this agency conflict may cause the impact of managers' personal characteristics on investment decisions. If managers have higher level of free cash flow or their compensation plans place a heavy emphasis on near-term stock returns, they may invest more than they would have in order to meet capital market expectations or meet bonus targets (Murphy, 1985; Jensen, 1986; Stulz, 1990; Richardson, 2006; McNichols and Stubben, 2008). This is because managers feel that their compensation, power and job satisfaction are enhanced by managing a growing firm. For example, Jensen (1986) and Blanchard et al. (1994) argue that managers have incentives to consume perquisites and to grow their firms beyond the optimal size. Lan and Wang (2006) find that managers may engage in wasteful expenditure in order to increase their private benefits, which further destroy shareholders' wealth. Specially, the managers maximizing their personal welfares are inclined to make some investments that are not in the best interests of shareholders (Jensen and Meckling, 1976; Stulz, 1990). The result of this myopic behavior could be over-investment. That is, the severe agency conflict increases the managers' incentives to over invest and pursue future private benefits (Albuquerque and Wang, 2008).⁴

⁴ Company's directors and managers could receive pecuniary and non-pecuniary private benefits by means of over-investment. The non-pecuniary benefits usually derive from empire building or name recognition from managing larger firm (Jensen, 1986).

Although agency conflict can provide financial motivation for managers to engage in over-investment decision (Jensen, 1986; Stulz, 1990; Richardson, 2006), those firms which over-invest are more likely to be targets for shareholder lawsuits (McTier and Wald, 2011). Thus, managerial decisions on over-investment may suffer from higher level of the firm's litigation risk. McTier and Wald (2011) suggest that firms which over-invest, acquire more, and payout less cash are more likely to be sued. Peng and Roell (2008) find that the probability of lawsuit is positively associated with acquisition activities.

However, managers could mitigate their personal legal liability against the failure of investment policy through D&O insurance coverage, because D&O insurance policy can provide litigation costs for claims made against individual directors and officers for their wrongful acts to the extent which indemnification does not apply (Chung and Wynn, 2008; Wynn, 2008). Core (1997) argues that D&O insurance purchases induce the directors to be less risk averse and less likely to reject attractive new risky projects. Lin et al. (2011) find that managers carrying high levels of D&O insurance coverage make poor acquisition decisions that primarily generate private benefits to themselves rather than to shareholders. As managers covered by higher *excess* liability coverage, their investment decisions are prone to depart from the optimal level and they are more likely to undertake risky investment projects (Core, 1997). Therefore, reduced managers' expected legal liability via D&O insurance coverage could induce moral hazard problem among directors and officers by protecting them from shareholder lawsuits (Baker and Griffith, 2010). They are thereby likely to over invest on self-serving projects at the cost of outside shareholders. Based on discussion above, we expect that managers with *excess* D&O insurance coverage may over invest for the purpose of their private benefits, and formulate the following hypothesis:

Hypothesis 1: The excess D&O insurance coverage is positively associated with over-investment.

If D&O insurance coverage induces agency problem and moral hazard amongst well-protected managers, the over-investing firms with abnormally high D&O insurance coverage are more likely to make poor investment decision. Managers maximizing their personal welfares are inclined to invest in negative net present value projects which are not in the best interests of shareholders (Jensen and Meckling, 1976). Recent research documents that poor future performance follows a firm's over-investment activities. Gordon and Myers (1998) find that over-investment is significantly associated with lower Tobin's Q. Titman et al. (2004) and Fairfield et al. (2003) find that firms with extensive capital investment activity and growth in net operating assets respectively, experience inferior future stock returns.

Because D&O insurance protects managers from the threat of lawsuits and personal financial liability incurred by business decision, it increases managerial incentives to act in

accordance with their opportunistic behaviors (Chalmers et al., 2002; Wynn, 2008; Chung and Wynn, 2008). Thus, Managers with lower litigation risk will have a tendency to over-invest by accepting marginal investment projects with negative net present values. That is, those managers are often tempted to expand the size of the company, even if the expansion is not profitable. Lin et al. (2011) find that managers carrying high level of D&O insurance make poor merger and acquisition decisions that cause lower stock returns around the acquisition date. Therefore, the managers who have abnormal legal liability coverage could divert these investments toward personal benefits at the expense of firm's value. Accordingly, we hypothesize that over-investing firms with excess D&O insurance coverage appear to have poor investment decisions and then result in poor subsequent operating performance.

Hypothesis 2: Over-investing firms with excess D&O insurance coverage have poor future performance.

3. Research design

3.1 Measure of over-investment

Following Richardson (2006), we measure over-investment using the following regression specification:

$$NEWINV_{it} = \alpha_0 + \alpha_1 GROW_{it-1} + \alpha_2 LEV_{it-1} + \alpha_3 CASH_{it-1} + \alpha_4 AGE_{it-1} + \alpha_5 SIZE_{it-1} + \alpha_6 RET_{it-1} + \alpha_7 NEWINV_{it-1} + \epsilon_{it} \quad (1)$$

where, for firm i and in year t (or $t-1$), $NEWINV$ denotes new investment of a firm scaled by average total assets.⁵ $GROW$ is the growth of a company measured by the factor score obtained from a principal components factor analysis of book-to-market of equity, earnings-to-price ratios and Tobin's Q. LEV is the leverage measured by the ratio of total debts to total assets. $CASH$ is sum of cash, cash equivalents and short term investments scaled by lagged total assets. AGE is natural logarithm of the numbers of listing years. $SIZE$ is the size of the firm measured by the natural logarithm of the book value of total assets. RET is the annual stock return measured as the change in market value of the firm over that prior year.

For each firm in the sample, we obtain the residuals from the above expectations model of investment. Following previous studies (e.g., Biddle et al., 2009; Richardson, 2006), firms with positive residual are classified as group of over-investing companies, while firms with negative residuals are classified as under-investing group. $OVERINV$ is an indicator variable for over-investment and it takes the value of one when firms with positive residuals, and zero

⁵ $NEWINV$ is the difference between $TOTALINV$ and $MAININV$. $TOTALINV$ is total investment expenditure, calculated as research and development expenditure, plus capital expenditures, plus acquisition expenditure, less cash proceeds from sale of property, plant and equipment. $MAININV$ is investment expenditure necessary to maintain assets in place, defined as depreciation and amortization.

(i.e., negative residuals) otherwise. We also include year and industry dummies in all of our regressions to control the year effect and industry effect.

3.2 Measures of excess liability coverage

We identify excess liability coverage as the excess D&O insurance coverage. Following prior finance and economics literature (e.g., Wynn, 2008; Chung and Wynn, 2008), we measure excess D&O insurance coverage as the residual from the regression of a D&O insurance coverage measure on its determinants. The expected D&O insurance coverage model is described below:

$$DOCOV_{it} = \beta_0 + \beta_1 SIZE_{it} + \beta_2 LEV_{it} + \beta_3 CROSS_{it} + \beta_4 OUTDIR_{it} + \beta_5 OUROWN_{it} + \beta_6 RETVOL_{it} + \beta_7 HITECH_{it} + \beta_8 CASH_{it} + \varepsilon_{it} \quad (2)$$

where, for firm i and in year t , *DOCOV* represents the D&O coverage limit scaled by lagged total assets. *SIZE* is the natural logarithm of total assets. *LEV* is the debt ratio. *CROSS* is a dummy variable that take the value of one if the firm is cross-listed in exchanges outside of Taiwan, and zero otherwise. *OUTDIR* is the percentage of outside director on the board. *OUTOWN* is the percentage of common shares held by outside blockholders. *RETVOL* is the volatility of stock returns measured by the natural logarithm of annualized variance of daily return over the current fiscal year. *HITECH* is a dummy variable that take the value of one if the firm is classified as a high-tech company, and zero otherwise. *CASH* is sum of cash, cash equivalents and short term investments scaled by lagged total assets. We then obtain the measure of excess D&O insurance coverage (*EXDOCOV*) as the residual from the regression above.

3.3 Empirical specification

To test Hypothesis 1 that excess D&O insurance coverage is related to over-investment, we estimate the following logistic regression model:

$$OVERINV_{it} = \gamma_0 + \gamma_1 EXDOCOV_{it} + \gamma_2 CEOOWN_{it} + \gamma_3 CEOOWN_{it}^2 + \gamma_4 NOBD_{it} + \gamma_5 OUTDIR_{it} + \gamma_6 GROUP_{it} + \gamma_7 INVOPP_{it} + \gamma_8 CFO + \gamma_9 CFOVOL_{it} + \gamma_{10} LEV_{it} + \gamma_{11} ROA_{it} + \gamma_{12} SIZE_{it} + \varepsilon_{it} \quad (3)$$

where, for firm i and in year t :

OVERINV = indicator variable set equal to one if firms with positive residuals (estimated by using expected investment model of Richardson (2006)) and zero for otherwise;

EXDOCOV = excess D&O insurance coverage;

<i>CEOOWN</i>	= percentage of outstanding common stock held by CEO;
<i>CEOOWN</i> ²	= square of <i>CEOOWN</i> ;
<i>NOBD</i>	= number of directors on the board;
<i>OUTDIR</i>	= percentage of outside directors on the board;
<i>GROUP</i>	= indicator variable set equal to one if parent company is a conglomerate (business group) and zero for otherwise;
<i>INVOPP</i>	= capital expenditure scaled by lagged total assets;
<i>CFO</i>	= operating cash flows divided by lagged total assets;
<i>CFOVOL</i>	= standard deviation of operating cash flows divided by lagged total assets during the past five years (including year <i>t</i>) scaled by the magnitude of average operating cash flows (divided by lagged total assets) over the same period;
<i>LEV</i>	= ratio of total debt to the book value of total assets;
<i>ROA</i>	= return on assets, measured as earnings before extraordinary items divided by lagged total assets.
<i>SIZE</i>	= natural logarithm of the book value of total assets;

Equation (3) includes several control variables that may affect investment decisions. Ghosh et al. (2007) provide evidence that there is a non-linear relation between CEO stock ownership and corporate investment. We therefore include CEO ownership (*CEOOWN*) and its square term (*CEOOWN*²) to control for this ownership feature. We also control for size of the board (*NOBD*) and the presence of outside directors (*OUTDIR*) since board size and percentage of outside independent directors positively affect firm's investment (Malmendier and Tate, 2008; Filatotchev and Wright, 2011). Moreover, many listed companies in East Asian economies are conglomerates (business groups), which can impact their listed subsidiary companies' investment decision for the sake of their private control benefits (Claessens and Fan, 2002). We thus control for existence of group business (*GROUP*) in the regression.

In addition, we control for investment growth opportunity (*INVOPP*) since high-growth firms tend to invest more (Lang et al., 1996; Kaplan and Zingales, 1997). We include cash flow (*CFO*) since prior research (e.g., Fazzari et al., 1988; Hoshi et al., 1991) finds that cash flows are positively associated with discretionary investment. We further control for cash flow volatility (*CFOVOL*) as another independent variable because firms with volatility cash flows permanently forgo investments (Minton and Schrand, 1999). We also control for leverage (*LEV*) because firms with high leverage tend to under-invest (Lang et al., 1996; Kang, 1995). Moreover, firm with good performance may have greater capability to invest (Huang et al., 2011). We thus include return on assets (*ROA*) to control this effect. We control for firm size (*SIZE*) since managers' perquisites associated with over-investment increase with firm size (Huang, et al., 2011; D'Mello and Miranda, 2010).

To explore Hypothesis 2 whether over-investing firms with excess D&O insurance coverage exhibits a poor future performance, we run the following regressions:

$$\begin{aligned}
 NTQ_{it+1} = & \theta_0 + \theta_1 OVERINV_{it} + \theta_2 EXDOCOV_{it} + \theta_3 EXDOCOV_{it} * OVERINV_{it} + \theta_4 FAM_{it} \\
 & + \theta_5 NOBD_{it} + \theta_6 INST_{it} + \theta_7 INVOPP_{it} + \theta_8 RETVOL_{it} + \theta_9 LEV_{it} + \theta_{10} SIZE_{it} \\
 & + \theta_{11} AGE_{it} + \varepsilon_{it}
 \end{aligned} \tag{4}$$

where, for firm i and in year t :

NTQ = next year's Tobin's Q calculated as market value of equity plus the book value of debt, divided by the book of total assets;

FAM = indicator variable set equal to one if the dominant shareholder is a family, and zero otherwise.

$INST$ = percentage of outstanding shares held by institutional investors;

AGE = number of years since the firm's inception.

The variable definitions of $EXDOCOV$, $OVERINV$, $NOBD$, $INVOPP$, LEV , and $SIZE$ are defined the same as in equation (2) and (3).

We introduce a number of control variables that had previously been related to firm performance. Previous empirical studies have been documented that founding family ownership can positively or negatively influence firm performance (Morck et al., 1988; Anderson and Reeb, 2003). We thus control for the presence of founding family (FAM) in the regression. We control for board size ($BDSIZE$) since firms with a larger boards is related to a lower valuation (Yermack, 1996). As in McConnell and Servaes (1990), we also control for ownership of institutional investors ($INST$) since institutional shareholders play an effective monitor and are positively related to firm value. Furthermore, Smith and Watts (1992) finds evidence that firm valuation is positively associated with investment growth opportunities ($INVOPP$), we thus control for this effect. We also include firm risk ($RETVOL$) and firm leverage (LEV) in the regression because higher risk profiles and leverage ratio erode the firm profitability (McConnell and Servaes, 1995; Anderson and Reeb, 2003). We control for firm size ($SIZE$) due to a significant negative relationship between firm size and profitability (e.g., Lins, 2001; Bozec and Laurin, 2008). Since Anderson and Reeb (2003) find evidence that younger firms perform better than older firms in terms of financial performance, we thus include firm age (AGE) in the regression.

4. Data sample and empirical results

4.1 Sample

The initial sample for this study consists of all firms listed on the Taiwan Stock Exchange. Because the insurance data had not been officially and fully disclosed until 2008,

the sample period runs from 2008 to 2010. We obtain the insurance data from Taiwan Economics Journal (TEJ) database. The financial accounting data, corporate governance data, and stock price data are also drawn from the TEJ database. Table 1 summarizes our sample selection procedure. As outlined in Table 1, we indentify a total of 1,365 firms (4,086 firm-years) over the period of 2008-2010. We delete 51 firms (153 firm-years) in financial institutions and regulated utilities from the sample to avoid the confounding effects of regulation. We then remove 2,038 firm-years of 607 firms without details on D&O coverage. We also delete 120 firms-years of 45 firms with insufficient data to estimate over-investment and excess D&O liability coverage, and compute a set of control variables. Finally, to mitigate the effect of outliers, we winsorize observations that fall in the top 1% and bottom 1% of the empirical distribution for each variable. The final sample is comprised of 662 firms with 1,775 firm-year observations; 543 in 2008, 603 in 2009 and 629 in 2010.⁶

[Insert Table 1 here]

4.2 Descriptive statistics

Table 2 outlines the descriptive statistics of the sample. Panel A of Table 2 shows that about half of the sample firms (51%) have over-investment during the sample period. The average (median) D&O coverage limit is \$268 million (\$160 million), and the mean (median) excess D&O coverage (*EXDOCOV*) is -0.001 (-0.013). In addition, Panel B of Table 2 indicates that the mean (median) subsequent Tobin's Q (*NTQ*) is 1.608 (1.365).

[Insert Table 2 here]

Table 3 reports univariate tests for difference in mean (t-test) and median (Wilcoxon test) between over-investment sample and rest of the sample (i.e., firms without over-investment). Table 3, Panel A, shows that the mean (median) *EXDOCOV* for over-investment sample is 0.009 (-0.011), compared with a mean for rest of the sample of -0.012 (-0.015), resulting in a difference of 0.020 (0.004) which is statistically significant at the 1% level. This suggests that over-investing firms tend to carry abnormally high level of D&O insurance coverage. In panel B, we further partition our sample into high and low excess D&O coverage groups by the sample median of *EXDOCOV*. As in high *EXDOCOV* group, the mean (median) *NTQ* for over-investment sample is 1.545 (1.307), compared with 1.584 (1.354) for rest of the sample, suggesting a difference of -0.039 (-0.047) and statistically significant at 1% level (5% level). Also, in low *EXDOCOV* group, the mean (median) difference of *NTQ* between over-investment sample and rest of sample is statistically significant at 10% level (5% level).

⁶ As we examine the effect of excess D&O insurance on the subsequent performance of over-investment, the sample period is restricted to 2008-2009 and sample size is reduced to 1,146 firm-years.

This indicates that over-investing firms with excess D&O coverage exhibit poor subsequent performance.

[Insert Table 3 here]

Table 4 contains pairwise correlations between over-investment, excess coverage, subsequent firm performance, and other regression variables in empirical analyses. We find that excess D&O insurance coverage (*EXDOCOV*) is positively correlated with over-investment (*OVERINV*) (Pearson correlation = 0.136). We also find that both over-investment (*OVERINV*) (Pearson correlation = -0.017 while is not statistically significant) and excess D&O coverage (*EXDOCOV*) (Pearson correlation = -0.159) are negatively correlated with subsequent performance (*NTQ*). In addition, the correlations between excess coverage (*EXDOCOV*), over-investment (*OVERINV*) and other regression variables are modest (correlations are mostly less than 0.2 in magnitude), indicating that multicollinearity is not a major concern to interpretation of our empirical inferences.

[Insert Table 4 here]

4.3 Primary results

4.3.1 Excess D&O insurance coverage and over-investment

We conduct logistic regression to investigate whether excess D&O insurance coverage increases the likelihood of over-investment. Table 5 presents the results for logistic regression. In the table, we report z-values that computed using standard errors adjusted for clustering at firm level. As shown in Table 5, the coefficient on *EXDOCOV* is highly significant with the expected positive sign at less than the 1% level. The finding strongly supports our first hypothesis that, ceteris paribus, firms with excess D&O coverage result in opportunistic managers to undertake excessive investments for personal benefits.

With respect to the coefficients on control variables, we find a significantly positive coefficient on business group dummy (*GROUP*), suggesting that firms with business group affiliation are prone to over invest. In addition, we document a significantly positive coefficient on *INVOPP*, suggesting that firms with higher growth opportunities have higher investment rates. We also find that cash flow (*CFO*) is positively related with over-investment, suggesting that firms have higher cash flow tend to spend more on investment. Furthermore, the coefficient on *LEV* is significantly negative, suggesting that high-leverage firms are more likely to under-invest. Finally, large firms (*SIZE*) tend to invest more in our sample.

[Insert Table 5 here]

4.3.2 Future performance for over-investing firms with excess D&O insurance coverage

Table 6 presents the OLS regression results of subsequent performance of over-investing firms with excess D&O insurance coverage. We report *t*-values that are based on standard errors adjusted for clustering at firm level. As shown, the coefficient on *EXDOCOV* is significantly negative while the coefficient on *OVERINV* is not significant negative. This is consistent with Chalmers et al. (2002) that firms with poor future performance as managers are overly covered. In addition, the coefficient on the interaction term *OVERINV*EXDOCOV* has the expected negative sign and is significant at the 1% level, supporting the second hypothesis that, ceteris paribus, over-investing firms with abnormally high coverage have a poor subsequent performance. Therefore, managers carrying excess D&O insurance coverage will have a tendency to over-invest the projects with negative net present values.

Looking at the control variables, we find a significantly positive coefficient on family firm dummy (*FAM*), consistent with Anderson and Reeb's (2003) finding that family owners have an interest in creating firm value since their longer investment horizon, lower asymmetric between owners and managers, and better monitoring of management. We also demonstrate that the ownership of institutional investors (*INST*) have a significantly positive impact on firm performance. In addition, we document a significantly positive coefficient on *INVOPP*, suggesting that firms with more investment growth opportunities are beneficial for firm value. We also find that return volatility (*RETVOL*) and firm leverage (*LEV*) are negatively associated with performance, suggesting that firms with a higher risk and leverage are detrimental to profitability. Finally, the coefficients on *SIZE* and *AGE* are significantly negative, suggesting that small and younger firms exhibit a superior performance.

[Insert Table 6 here]

4.4 Further test: over R&D investment and excess D&O insurance coverage

Investments in R&D project are generally subject to large degree of uncertainty and it is difficult for the market to fully estimate its impact on the firm value. Jensen et al. (1992) suggest that R&D investment is more costly for external investors to monitor, implying higher volatility. Kothari et al. (2002) find that investments in R&D are typically long-term in nature with uncertainty of future benefits. The higher R&D investment is frequently intended a way for managers to mask their true ability (Holmstrom and Costa, 1986; Meulbroek et al., 1990). Jain and Kini (2008) suggest that the payoff of R&D investment are realized in the long-term and managers' personal cost arising from failed R&D projects is significantly lower than that of failed regular investments. That is, the higher R&D investment is an avenue through which managers can try to either enrich themselves or attempt to hide their poor ability. In addition, managers who are well-protected by the D&O insurance coverage

become less risk averse and are more likely to make risky investment projects (Core, 1997). As a result, a higher level of D&O insurance coverage may create opportunistic incentives and moral hazard for managers to make overly high R&D investments.

To estimate over R&D investment, we regress the R&D investment on its determinants, which is suggested by Nam et al. (2003). The model is as follows:

$$RD = \delta_0 + \delta_1 LOGSTK_{it} + \delta_2 DEBT_{it} + \delta_3 SIZE_{it} + \delta_4 INST_{it} + \delta_5 CEOOWN_{it} + \delta_6 MB_{it} + \delta_7 BUSINRISK_{it} + \varepsilon_{it} \quad (5)$$

where, for firm i and in year t , RD denotes R&D investment of a firm scaled by average total assets. $LOGSTK$ is the natural logarithm of the market value of equity shares held by CEO. $DEBT$ is the ratio of long-term debt to total assets. $SIZE$ is the natural logarithm of the book value of total assets. $INST$ is the percent of common shares held by institutional investors. $CEOOWN$ is the percent of common shares held by CEO. MB is the ratio of market to book value of equity. $BUSINRISK$ is the standard deviation of the percent change in operating income for the prior five years. We then obtain the residuals from the above regression and define over R&D investment, $OVERRD$, as an indicator variable that takes the value of one when firms with positive residuals and zero otherwise.

We conduct this analysis by replacing the variable, $OVERINV$ with $OVERRD$ in equations (3) and (4). The results in Table 7 show that the coefficient on $EXDOCOV$ is significantly positive at the 1% level, indicating that managers with abnormally high coverage tend to over-invest in R&D for masking their opportunistic behavior and poor ability. Moreover, the interaction term on $OVERRD * EXDOCOV$ is negatively related to future performance (NTQ), suggesting that overly covered managers are inclined to over-invest R&D projects with negative net present values which leading to poor subsequent performance. Results on control variables are similar to those reported in Table 5.

[Insert Table 7 here]

4.5 Robustness checks

4.5.1 Controlling for self-selection bias

Because our sample only included companies who purchased D&O insurance, there was a possibility of self-selection bias if certain companies tended to purchase D&O insurance. We thus run two-stage Heckman regressions to control for possible self-selection bias (Heckman, 1979). In the first regression, the dependent variable, $PURCHASE$, is a dummy variable if the company purchases D&O insurance, and zero otherwise. Following prior research (Core, 1997; O'Sullivan, 2002; Chung and Wynn, 2008), explanatory variables include firm size ($SIZE$), dummy for cross-listed status ($CROSS$), market to book ratio (MB),

dummy for membership in high-tech industry (*HITECH*), debt ratio (*LEV*), dummy for increase in the book value of total assets (*ACQUIRER*)⁷, dummy for decrease in the book value of total assets (*DIVESTOR*)⁸, CEO ownership measured by the percentage of common shares held by the CEO (*CEOOWN*), outside blockholders' ownership (*OUTOWN*), and excess cash (*EXCASH*).⁹ The first stage regression is based on the entire sample of 3,933 observations (excluding financial and utility firms and missing data), of which 2,038 observations do not purchase D&O insurance (51.82%).

$$PURCHASE_{it} = \eta_0 + \eta_1 SIZE_{it} + \eta_2 CROSS_{it} + \eta_3 MB_{it} + \eta_4 HITECH_{it} + \eta_5 LEV_{it} + \eta_6 ACQUIRER_{it} + \eta_7 DIVESTOR_{it} + \eta_8 CEOOWN_{it} + \eta_9 OUTOWN_{it} + \eta_{10} EXCASH_{it} + \varepsilon_{it} \quad (6)$$

We estimate the Inverse Mills ratio (*Lamda*) from equation (6)¹⁰ and then test our hypothesis by including *Lamda* in equations (3) and (4). The results, which are reported in Table 8, show that the coefficients on the inverse Mills ratio (*Lamda*) are statistically significant, confirming the importance of an explicit control for self-selection bias. Nevertheless, the results indicate that the coefficients for *EXDOCOV* and *EXDOCOV*OVERINV* remain significant with the expected positive and negative signs respectively. Other control variables broadly continued to be significant and preserve their expected signs. Overall, the results in Table 8 are qualitatively similar to those reported in Tables 5 and 6.

[Insert Table 8 here]

4.5.2 Controlling for endogeneity

A potential bias for our finding is that the excess D&O liability insurance coverage and over investment may be endogenously determined. For example, firms with extensive capital investment activity may be the reason for carry high insurance coverage. That is, firms determine to carry high liability coverage based on the extent of investment. We examine this issue by adopting a simultaneous equation analysis (2SLS). We replace the excess coverage variable, *EXDOCOV* with *HIDOCOV*. *HIDOCOV* is a dummy variable set to one if the fitted value of coverage limits is greater or equal to its median, and zero otherwise.¹¹ Table 9

⁷ *ACQUIRER* takes the value of one if the book value of total assets at the fiscal year-end increases by more than 25% from the beginning of the fiscal year, and zero otherwise.

⁸ *DIVESTOR* takes the value of one if the book value of total assets at the fiscal year-end decrease by more than 25% from the beginning of the fiscal year, and zero otherwise,

⁹ Following Wynn (2008), the excess cash, *EXCASH*, is the residual derived from the regression of cash on determinants of cash holding which including firm size, growth opportunities, cash flows, financial distress, net working capital, governance quality, cross-listing status, volatility of stock returns, a membership in high-tech industry, and D&O coverage limits.

¹⁰ The inverse Mills ratio, calculated from the probit model, equals the probability density function divided by the cumulative density function.

¹¹ We obtain the fitted value by regressing D&O coverage limits on all exogenous variables (instruments).

provides the results of this analysis and clearly shows that the coefficient on *HIDOCOV* and *HIDOCOV*OVERINV* remains statistically positive and negative, respectively, suggesting that our results are not driven by endogeneity problem associated with D&O liability coverage.

[Insert Table 9 here]

4.5.3 Alternative over-investment measure

As in prior analyses, we measure over-investment using the expect investment model of Richardson (2006) and create a dummy variable. As a robustness check, we follow prior research (e.g., Malmendier and Tate, 2005; Biddle et al., 2009) and use capital investment to measure over-investment, which is measured as the ratio of the net increase in fixed asset investment over a particular year scaled by the total fixed at the beginning of that year. We use this new dependent variable and conduct OLS regression. As shown in Table 10, our primary result is robust to this alternative proxy.

[Insert Table 10 here]

5. Conclusion

Managerial legal liability coverage shields directors and officers from lawsuits by shareholders (and other parties) when their decisions are made on the behalf of the firm. Several existing studies suggest that legal liability coverage plays a governance monitoring device since an insurer thoroughly scrutinizes the insured (Holderness, 1990; Core, 2000). However, prior research generally suggests that the existence of managerial legal liability coverage could cause moral hazard among directors and officers and thus provides them with incentives to undertake value-destroying decisions (Chalmers et al., 2002; Chung and Wynn, 2008; Wynn, 2008; Lin et al., 2011). We extend this research by examining how abnormally high level of D&O insurance coverage affects a firm's investment efficiency.

Using the sample of Taiwanese listed firms, which carry D&O insurance coverage during the period 2008-2010, we provide evidence that firms with higher legal liability coverage, as measured by excess D&O insurance, are more prone to over-invest. We also find that over-investing firms with excess D&O insurance coverage appear to have poor investment decisions that result in inferior subsequent operating performance. We further find that managers covered by excess D&O insurance tend to makes more R&D investment projects. That is, those managers become less risk averse and hide their opportunism and poor talent. Our main results are also robust to a series of robustness checks.

In sum, our results are consistent with the argument that the agency conflicts and moral hazard problems are aggravated by excess coverage which provides the directors and managers with more room to pursuit private/personal benefits via inefficient investments

decisions. Our study also complements existing literature (e.g., Lin et al., 2011) which documents that managers who are protected from D&O insurance make poor merger and acquirers (M&A) decisions.

A potential limitation of this paper lies in the measures of excess litigation coverage and over-investment by the firm. In particular, the validity of our findings is subject to the condition that our measures of excess D&O insurance coverage and over-investment reasonably capture opportunistic incentives and avenue of pursuing personal benefits. Thus, potentially fruitful areas of further research may include refinement of existing methods for measuring excess D&O insurance coverage and over-investment.

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Table 1 Sample Selection Criteria

This table shows the sample selection screens.

	Number of firms	Number of firm-years
Initial sample in Taiwan Stock Exchange during 2008-2010	1,365	4,086
Less		
:		
Firms in financial services and regulated industries	(51)	(153)
Firms without D&O insurance	(607)	(2,038)
Firms with insufficient data for over-investment and excess liability coverage calculation, and missing control variable data	(45)	(120)
Final sample	662	1,775

Table 2 Summary Statistics

This table reports descriptive statistics of the variables used in the analyses. *OVERINV* is an indicator variable equal to one if the firms with positive residuals (estimated by using Richardson (2006)'s investment model) and zero otherwise. *DOCOV* is D&O coverage limits scaled by lagged total assets. D&O coverage is D&O insurance coverage limits at the end of the fiscal year (in \$ millions). *EXDOCOV* is the residual derived from the regression of D&O insurance coverage on determinants of D&O insurance. *CEOOWN* is the percentage of CEO stock ownership. *NOBD* is the total number of directors on the board. *OUTDIR* is the percentage of outside directors that sit on the board. *GROUP* is an indicator variable equal to one if parent company is a group company and zero for otherwise. *INVOPP* is capital expenditure scaled by lagged total assets. *CFO* is operating cash flow scaled by lagged total assets. *CFOVOL* is the standard deviation of operating cash flows divided by lagged total assets during the past five years scaled by the mean of operating cash flows (divided by lagged total assets) over the same period. *LEV* is the ratio of total debt to total assets. *ROA* is earnings before extraordinary items divided by lagged total assets. *SIZE* is the natural log of total assets. *NTQ* is the sum of market value of equity and the book value of debt scaled by the book value of total assets at $t+1$. *FAM* is an indicator variable equal to one if the founding family is presence in the firm and zero for otherwise. *INST* is the percentage of stock held by institutional investors. *RETVOL* is the volatility of stock returns calculated as the natural logarithm of annualized variance of daily return over the current fiscal year. *AGE* is the number of year since first date of incorporation.

Panel A: Descriptive statistics for the analysis of over-investment (n = 1,775)

Variables	Mean	Standard Deviation	First Quartile	Median	Third Quartile
<i>OVERINV</i>	0.509	0.500	0.000	1.000	1.000

<i>DOCOV</i>	0.075	0.093	0.019	0.044	0.092
D&O coverage (m\$)	268.000	386.000	95.800	160.000	320.000
<i>EXDOCOV</i>	-0.001	0.074	-0.041	-0.013	0.019
<i>CEOOWN</i>	0.019	0.024	0.002	0.009	0.026
<i>NOBD</i>	6.824	1.804	5.000	7.000	7.000
<i>OUTDIR</i>	0.428	0.203	0.286	0.429	0.571
<i>GROUP</i>	0.602	0.490	0.000	1.000	1.000
<i>INVOPP</i>	0.026	0.058	0.002	0.008	0.031
<i>CFO</i>	0.074	0.116	0.010	0.068	0.141
<i>CFOVOL</i>	0.607	4.719	0.317	0.642	1.277
<i>LEV</i>	0.352	0.171	0.218	0.337	0.458
<i>ROA</i>	0.039	0.111	0.001	0.046	0.100
<i>SIZE</i>	15.257	1.436	14.252	15.096	16.032
Panel B: Descriptive statistics for the analysis of future performance (n = 1,146)					
<i>NTQ</i>	1.608	0.809	1.095	1.365	1.832
<i>OVERINV</i>	0.535	0.499	0.000	1.000	1.000
<i>EXDOCOV</i>	-0.001	0.074	-0.041	-0.011	0.020
<i>FAM</i>	0.580	0.494	0.000	1.000	1.000
<i>NOBD</i>	6.818	1.810	5.000	7.000	7.000
<i>INST</i>	0.358	0.218	0.175	0.324	0.513
<i>INVOPP</i>	0.023	0.052	0.001	0.007	0.028
<i>RETVOL</i>	0.001	0.000	0.001	0.001	0.001
<i>LEV</i>	0.354	0.173	0.216	0.341	0.464
<i>SIZE</i>	15.248	1.448	14.224	15.086	16.030
<i>AGE</i>	22.437	10.842	13.000	20.000	29.000

Table 3 Univariate Statistics

This table presents a univariate comparison of D&O liability coverage and future firm performance between over-investment sample and rest of the sample. *DOCOV* is D&O coverage limits scaled by lagged total assets. D&O coverage is D&O insurance coverage limits at the end of the fiscal year (in \$ millions). *EXDOCOV* is the residual derived from the regression of D&O insurance coverage on determinants of D&O insurance. *NTQ* is the sum of market value of equity and the book value of debt scaled by the book value of total assets at $t+1$. The high and low *EXDOCOV* are classified by the sample median of *EXDOCOV*. The sample of over-investment and future performance analysis contains 1,775 and 1,146 firm-year observations, respectively. Numbers in parentheses are t -statistics from t -tests (parametric) for the differences in means, and z -statistics from Wilcoxon tests (nonparametric)

for the differences in medians. *, **, ***: statistically significantly different from zero at the 10%, 5%, and 1% level (two-tailed), respectively.

Panel A: Comparison of D&O coverage between over-investment sample and rest of the sample

Variables	Over-investment sample (<i>OVERINV</i> = 1; n = 904)		Rest of the sample (<i>OVERINV</i> = 0; n = 871)		Difference in	
	Mean	Median	Mean	Median	Means	Medians
					(<i>t</i> -statistic)	(<i>z</i> -statistic c)
<i>EXDOCOV</i>	0.009	-0.011	-0.012	-0.015	0.020*** (5.79)	0.004*** (2.69)

Panel B: Comparison of future performance between over-investment sample and rest of the sample

Variables	Over-investment sample (<i>OVERINV</i> = 1; n = 613)		Rest of the sample (<i>OVERINV</i> = 0; n = 533)		Difference in	
	Mean	Median	Mean	Median	Means	Medians
					(<i>t</i> -statistic)	(<i>z</i> -statistic c)
High group <i>EXDOCOV</i>						
<i>NTQ</i>	1.545	1.307	1.584	1.354	-0.039** * (2.62)	-0.047** (2.18)
Low group <i>EXDOCOV</i>						
<i>NTQ</i>	1.643	1.389	1.663	1.424	-0.020* (1.82)	-0.035** (2.25)

Table 4 Correlation Matrix

This table provides correlations between selected variables. Spearman correlations appear above the diagonal, Pearson correlations below it. *OVERINV* is an indicator variable equal to one if the firms with positive residuals (estimated by using Richardson (2006)'s investment model) and zero otherwise. *EXDOCOV* is the residual derived from the regression of D&O insurance coverage on determinants of D&O insurance. *CEOOWN* is the percentage of CEO stock ownership. *NOBD* is the total number of directors on the board. *OUTDIR* is the percentage of outside directors that sit on the board. *GROUP* is an indicator variable equal to one if parent company is a group company and zero for otherwise. *INVOPP* is capital expenditure scaled by lagged total assets. *CFO* is operating cash flow scaled by lagged total assets. *CFOVOL* is the standard deviation of operating cash flows divided by lagged total assets during the past five years scaled by the mean of operating cash flows (divided by lagged total assets) over the same period. *LEV* is the ratio of total debt to total assets. *ROA* is earnings before extraordinary items divided by lagged total assets. *SIZE* is the natural log of total assets. *NTQ* is the sum of market value of equity and the book value of debt scaled by the book value of total assets at $t+1$. *FAM* is an indicator variable equal to one if the founding family is presence in the firm and zero for otherwise. *INST* is the percentage of stock held by institutional investors. *RETVOL* is the volatility of stock returns calculated as the natural logarithm of annualized variance of daily return over the current fiscal year. *AGE* is the number of year since first date of incorporation. The sample of over-investment and future performance analysis contains 1,775 and 1,146 firm-years, respectively. Bold figures indicate significance levels at less than 5 % level.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
(1) <i>NTQ</i>		-0.017	-0.131	0.037	0.491	-0.032	0.192	0.063	-0.016	0.159	-0.149	0.240	-0.128	-0.155	0.360	-0.181	-0.293
(2) <i>OVERINV</i>			0.064	0.023	-0.003	0.003	0.019	-0.050	0.092	0.289	-0.031	0.060	0.017	-0.131	0.005	0.073	-0.009
(3) <i>EXDOCOV</i>				-0.048	0.059	0.105	0.011	0.153	0.086	0.105	0.117	-0.014	-0.027	-0.019	0.035	0.095	-0.089
(4) <i>CEOOWN</i>					0.022	0.011	0.067	-0.225	-0.032	0.016	-0.033	0.101	0.047	0.074	0.154	-0.106	-0.223
(5) <i>FAM</i>						-0.027	0.123	0.023	0.068	0.130	0.031	0.104	-0.031	-0.023	0.196	-0.048	-0.140
(6) <i>NOBD</i>							0.022	0.212	0.072	0.145	-0.086	0.074	-0.091	-0.042	0.046	0.180	0.088

(7) <i>OUTDIR</i>	0.144	0.020	0.025	-0.002	0.129	0.005	-0.252	-0.234	0.045	0.032	0.074	0.028	0.050	0.013	-0.226	-0.231
(8) <i>INST</i>	0.077	-0.111	0.132	-0.213	0.037	0.265	-0.256	0.325	0.130	-0.124	0.110	-0.017	0.031	0.251	0.414	0.031
(9) <i>GROUP</i>	-0.027	0.092	0.058	-0.018	0.068	0.067	-0.245	0.342	0.046	0.087	-0.039	-0.020	-0.061	-0.079	0.323	0.078
(10) <i>INVOPP</i>	0.063	0.293	0.107	0.018	0.105	0.107	0.066	0.136	0.023	-0.026	0.255	-0.011	0.016	0.175	0.086	-0.111
(11) <i>RETVOL</i>	-0.192	-0.024	0.103	-0.042	0.029	-0.114	0.030	-0.129	0.091	-0.035	-0.193	0.036	0.117	-0.318	-0.148	-0.275
(12) <i>CFO</i>	0.155	0.096	-0.003	0.044	0.082	0.065	0.068	0.110	-0.018	0.259	-0.188	-0.160	0.193	0.427	0.105	-0.164
(13) <i>CFOVOL</i>	-0.082	0.011	-0.060	0.018	-0.024	-0.008	-0.011	-0.012	0.007	-0.015	0.006	0.006	-0.078	-0.087	-0.058	-0.040
(14) <i>LEV</i>	-0.118	-0.130	-0.028	0.056	-0.027	-0.045	0.062	0.048	-0.044	0.025	0.167	0.144	0.036	0.226	-0.161	0.138
(15) <i>ROA</i>	0.155	0.019	-0.037	0.094	0.118	0.035	-0.003	0.193	-0.084	0.171	-0.327	0.386	-0.009	0.191	0.181	0.037
(16) <i>SIZE</i>	-0.167	0.108	0.078	-0.128	-0.041	0.201	-0.229	0.448	0.326	0.126	-0.170	0.116	-0.011	-0.172	0.130	0.243
(17) <i>AGE</i>	-0.256	-0.013	-0.102	-0.190	-0.147	0.113	-0.281	0.074	0.111	-0.134	-0.247	-0.091	-0.010	0.107	0.010	0.262

Table 5 Excess D&O Insurance Coverage and Over-Investment

This table reports the results of logistic regression of over-investment on excess D&O liability coverage and control variables. The dependent variable, *OVERINV*, is an indicator variable equal to one if the firms with positive residuals (estimated by using Richardson (2006)'s investment model) and zero otherwise. *EXDOCOV* is the residual derived from the regression of D&O insurance coverage on determinants of D&O insurance. *CEOOWN* is the percentage of CEO stock ownership. *NOBD* is the total number of directors on the board. *OUTDIR* is the percentage of outside directors that sit on the board. *GROUP* is an indicator variable equal to one if parent company is a group company and zero for otherwise. *INVOPP* is capital expenditure scaled by lagged total assets. *CFO* is operating cash flow scaled by lagged total assets. *CFOVOL* is the standard deviation of operating cash flows divided by lagged total assets during the past five years scaled by the mean of operating cash flows (divided by lagged total assets) over the same period. *LEV* is the ratio of total debt to total assets. *ROA* is earnings before extraordinary items divided by lagged total assets. *SIZE* is the natural log of total assets. Year and industry fixed effects are included but not reported for brevity. z-statistics, based on robust standard errors with firm-level clustering, are given in parentheses. *, **, ***: statistically significantly different from zero at the 10%, 5%, and 1% level (two-tailed), respectively.

Variables	Predicted sign	Dependent variable: <i>OVERINV</i>	
		Coefficient	(z-statistic)
<i>Intercept</i>	?	-1.574	(-1.11)
<i>EXDOCOV</i>	+	3.238***	(4.28)
<i>CEOOWN</i>	+	9.485	(1.35)
<i>CEOOWN</i> ²	—	-63.820	(-0.83)
<i>NOBD</i>	+	-0.054	(-1.36)
<i>OUTDIR</i>	+	0.182	(0.56)
<i>GROUP</i>	+	0.287**	(2.07)
<i>INVOPP</i>	+	17.076***	(8.66)
<i>CFO</i>	+	1.765***	(3.25)
<i>CFOVOL</i>	—	0.014	(1.31)
<i>LEV</i>	—	-1.843***	(-4.44)
<i>ROA</i>	+	-0.322	(-0.54)
<i>SIZE</i>	+	0.123**	(2.21)
<i>Year dummies</i>		Included	
<i>Industry dummies</i>		Included	
Pseudo-R ²		0.132	
n		1,775	

Table 6 Future Performance for Over-Investing Firms with Excess D&O Insurance Coverage

This table reports the results of logistic regression of future performance on over-investment, excess D&O liability coverage, and control variables. The dependent variable, *NTQ*, is next year's Tobin's Q, measured as the sum of market value of equity and the book value of debt scaled by the book value of total assets. *OVERINV* is an indicator variable equal to one if the firms with positive residuals (estimated by using Richardson (2006)'s investment model) and zero otherwise. *EXDOCOV* is the residual derived from the regression of D&O insurance coverage on determinants of D&O insurance. *FAM* is an indicator variable equal to one if the founding family is presence in the firm and zero for otherwise. *NOBD* is the total number of directors on the board. *INST* is the percentage of stock held by institutional investors. *INVOPP* is capital expenditure scaled by lagged total assets. *RETVOL* is the volatility of stock returns calculated as the natural logarithm of annualized variance of daily return over the current fiscal year. *LEV* is the ratio of total debt to total assets. *SIZE* is the natural log of total assets. *AGE* is the number of year since first date of incorporation. Year and industry fixed effects are included but not reported for brevity. *t*-statistics, based on robust standard errors with firm-level clustering, are given in parentheses. *, **, ***: statistically significantly different from zero at the 10%, 5%, and 1% level (two-tailed), respectively.

Variables	Predicted sign	Dependent variable: <i>NTQ</i>	
		Coefficient	(<i>t</i> -statistic)
<i>Intercept</i>	?	2.219***	(5.18)
<i>OVERINV</i>	—	-0.020	(-0.36)
<i>EXDOCOV</i>	—	-2.028***	(-3.66)
<i>OVERINV*EXDOCO</i>	—	-2.316***	(-3.15)
<i>V</i>			
<i>FAM</i>	+/-	0.349***	(7.33)
<i>NOBD</i>	—	-0.007	(-0.46)
<i>INST</i>	+	0.636***	(4.07)
<i>INVOPP</i>	+	-0.078	(-0.14)
<i>RETVOL</i>	—	-320.175***	(-4.40)
<i>LEV</i>	—	-0.448**	(-2.10)
<i>SIZE</i>	—	-0.076***	(-2.69)
<i>AGE</i>	—	-0.010***	(-3.19)
<i>Year dummies</i>		Included	
<i>Industry dummies</i>		Included	
Adjusted-R ²		0.193	
n		1,146	



Table 7 Over R&D Investment and Excess D&O Insurance Coverage

This table reports the analysis of over R&D investment. *OVERRD* is an indicator variable equal to one if the firms with positive residuals (estimated by using Nam et al. (2003)'s R&D investment model) and zero otherwise. *EXDOCOV* is the residual derived from the regression of D&O insurance coverage on determinants of D&O insurance. *CEOOWN* is the percentage of CEO stock ownership. *NOBD* is the total number of directors on the board. *OUTDIR* is the percentage of outside directors that sit on the board. *GROUP* is an indicator variable equal to one if parent company is a group company and zero for otherwise. *INVOPP* is capital expenditure scaled by lagged total assets. *CFO* is operating cash flow scaled by lagged total assets. *CFOVOL* is the standard deviation of operating cash flows divided by lagged total assets during the past five years scaled by the mean of operating cash flows (divided by lagged total assets) over the same period. *LEV* is the ratio of total debt to total assets. *ROA* is earnings before extraordinary items divided by lagged total assets. *SIZE* is the natural log of total assets. *NTQ* is the sum of market value of equity and the book value of debt scaled by the book value of total assets at $t+1$. *FAM* is an indicator variable equal to one if the founding family is presence in the firm and zero for otherwise. *INST* is the percentage of stock held by institutional investors. *RETVOL* is the volatility of stock returns calculated as the natural logarithm of annualized variance of daily return over the current fiscal year. *AGE* is the number of year since first date of incorporation. Year and industry fixed effects are included but not reported for brevity. z-statistics (*t*-statistics), based on robust standard errors with firm-level clustering, are given in parentheses. *, **, ***: statistically significantly different from zero at the 10%, 5%, and 1% level (two-tailed), respectively.

Variables	Dependent variable: <i>OVERRD</i>		Variables	Dependent variable: <i>NTQ</i>	
	Predicted sign	Coefficient (z-statistic)		Predicted sign	Coefficient (t-statistic)
<i>Intercept</i>	?	3.155*** (2.95)	<i>Intercept</i>	?	2.136*** (4.96)
<i>EXDOCOV</i>	+	3.064*** (3.40)	<i>OVERRD</i>	—	-0.099 (-1.64)
<i>CEOOWN</i>	+	8.518 (0.95)	<i>EXDOCOV</i>	—	-1.902*** (-3.33)
<i>CEOOWN</i> ²	—	-90.669 (-0.87)	<i>OVERRD*EXDOC</i>	—	-2.602*** (-3.51)
<i>NOBD</i>	+	-0.041 (-1.02)	<i>OV</i>		
<i>OUTDIR</i>	+	0.723* (1.81)	<i>FAM</i>	+/-	0.339*** (6.92)
			<i>NOBD</i>	—	-0.007 (-0.45)

<i>GROUP</i>	+	0.353**	<i>INST</i>	+	0.621***
		(2.14)			(4.00)
<i>INVOPP</i>	+	3.739***	<i>INVOPP</i>	+	0.019
		(4.00)			(0.04)
<i>CFO</i>	+	2.125***	<i>RETVOL</i>	—	-327.342***
		(4.24)			(-4.40)
<i>CFOVOL</i>	—	0.016	<i>LEV</i>	—	-0.462**
		(1.46)			(-2.22)
<i>LEV</i>	—	-1.264***	<i>SIZE</i>	—	-0.075***
		(-2.83)			(-2.64)
<i>ROA</i>	+	-1.024	<i>AGE</i>	—	-0.009***
		(-1.62)			(-3.04)
<i>SIZE</i>	+	0.112*			
		(1.90)			
<i>Year dummies</i>		Included	<i>Year dummies</i>		Included
<i>Industry dummies</i>		Included	<i>Industry dummies</i>		Included
Pseudo-R ²		0.061	Adjusted-R ²		0.197
n		1,775	n		1,446

Table 8 Controlling for Self-Selection Bias

This table reports two-stage Heckman regression results, which include the inverse Mills ratio to control for self-selection. *OVERINV* is an indicator variable equal to one if the firms with positive residuals (estimated by using Richardson (2006)'s investment model) and zero otherwise. *EXDOCOV* is the residual derived from the regression of D&O insurance coverage on determinants of D&O insurance. *CEOOWN* is the percentage of CEO stock ownership. *NOBD* is the total number of directors on the board. *OUTDIR* is the percentage of outside directors that sit on the board. *GROUP* is an indicator variable equal to one if parent company is a group company and zero for otherwise. *INVOPP* is capital expenditure scaled by lagged total assets. *CFO* is operating cash flow scaled by lagged total assets. *CFOVOL* is the standard deviation of operating cash flows divided by lagged total assets during the past five years scaled by the mean of operating cash flows (divided by lagged total assets) over the same period. *LEV* is the ratio of total debt to total assets. *ROA* is earnings before extraordinary items divided by lagged total assets. *SIZE* is the natural log of total assets. *NTQ* is the sum of market value of equity and the book value of debt scaled by the book value of total assets at $t+1$. *FAM* is an indicator variable equal to one if the founding family is presence in the firm and zero for otherwise. *INST* is the percentage of stock held by institutional investors. *RETVOL* is the volatility of stock returns calculated as the natural

logarithm of annualized variance of daily return over the current fiscal year. *AGE* is the number of year since first date of incorporation. *Lamda* is the inverse Mills ratio. Year and industry fixed effects are included but not reported for brevity. z-statistics (*t*-statistics), based on robust standard errors with firm-level clustering, are given in parentheses. *, **, ***: statistically significantly different from zero at the 10%, 5%, and 1% level (two-tailed), respectively.

Variables	Dependent variable: <i>OVERINV</i>		Variables	Dependent variable: <i>NTQ</i>	
	Predicted sign	Coefficient (z-statistic)		Predicted sign	Coefficient (t-statistic)
<i>Intercept</i>	?	-12.410*** (-6.39)	<i>Intercept</i>	?	7.402*** (6.61)
<i>EXDOCOV</i>	+	3.227*** (4.02)	<i>OVERINV</i>	—	-0.007 (-0.12)
<i>CEOOWN</i>	+	11.810* (1.65)	<i>EXDOCOV</i>	—	-1.882*** (-3.28)
<i>CEOOWN</i> ²	—	-47.001 (-0.61)	<i>OVERINV*EXDOC</i>	—	-2.872*** (-3.85)
<i>NOBD</i>	+	0.025 (0.61)	<i>OV</i>	+/-	0.324*** (6.77)
<i>OUTDIR</i>	+	0.067 (0.21)	<i>FAM</i>	—	-0.024 (-1.60)
<i>GROUP</i>	+	0.309** (2.21)	<i>NOBD</i>	—	-0.024 (-1.60)
<i>INVOPP</i>	+	18.938*** (9.10)	<i>INST</i>	+	0.521*** (3.49)
<i>CFO</i>	+	1.956*** (3.51)	<i>INVOPP</i>	+	-0.185 (-0.35)
<i>CFOVOL</i>	—	0.015 (1.40)	<i>RETVOL</i>	—	331.709*** (4.61)
<i>LEV</i>	—	-2.551*** (-5.66)	<i>LEV</i>	—	-0.533** (-2.57)
<i>ROA</i>	+	1.206* (1.75)	<i>SIZE</i>	—	-0.235*** (-5.45)
<i>SIZE</i>	+	0.355*** (5.34)	<i>AGE</i>	—	-0.007** (-2.26)
<i>Lamda</i>	?	4.546*** (7.22)	<i>Lamda</i>	?	-1.876*** (-5.00)

<i>Year dummies</i>	Included	<i>Year dummies</i>	Included
<i>Industry dummies</i>	Included	<i>Industry dummies</i>	Included
Pseudo-R ²	0.158	Adjusted-R ²	0.230
n	1,775	n	1,446

Table 9 Controlling for Endogeneity

This table reports two-stage least squares regression results. *OVERINV* is an indicator variable equal to one if the firms with positive residuals (estimated by using Richardson (2006)'s investment model) and zero otherwise. *HIDOCOV* is an indicator variable equal to one if the predicted D&O coverage limits is greater or equal to its median and zero for otherwise. *CEOOWN* is the percentage of CEO stock ownership. *NOBD* is the total number of directors on the board. *OUTDIR* is the percentage of outside directors that sit on the board. *GROUP* is an indicator variable equal to one if parent company is a group company and zero for otherwise. *INVOPP* is capital expenditure scaled by lagged total assets. *CFO* is operating cash flow scaled by lagged total assets. *CFOVOL* is the standard deviation of operating cash flows divided by lagged total assets during the past five years scaled by the mean of operating cash flows (divided by lagged total assets) over the same period. *LEV* is the ratio of total debt to total assets. *ROA* is earnings before extraordinary items divided by lagged total assets. *SIZE* is the natural log of total assets. *NTQ* is the sum of market value of equity and the book value of debt scaled by the book value of total assets at $t+1$. *FAM* is an indicator variable equal to one if the founding family is presence in the firm and zero for otherwise. *INST* is the percentage of stock held by institutional investors. *RETVOL* is the volatility of stock returns calculated as the natural logarithm of annualized variance of daily return over the current fiscal year. *AGE* is the number of year since first date of incorporation. Year and industry fixed effects are included but not reported for brevity. z-statistics (t-statistics), based on robust standard errors with firm-level clustering, are given in parentheses. *, **, ***: statistically significantly different from zero at the 10%, 5%, and 1% level (two-tailed), respectively.

Variables	Dependent variable: <i>OVERINV</i>		Variables	Dependent variable: <i>NTQ</i>	
	Predicted sign	Coefficient (z-statistic)		Predicted sign	Coefficient (t-statistic)
<i>Intercept</i>	?	-4.241*** (-2.78)	<i>Intercept</i>	?	2.021*** (4.14)
<i>HIDOCOV</i>	+	0.901*** (6.21)	<i>OVERINV</i>	—	-0.026 (-0.43)
<i>CEOOWN</i>	+	8.428	<i>HIDOCOV</i>	—	-0.195**

		(1.15)			(-2.36)
<i>CEOOWN</i> ²	—	-52.730	<i>OVERINV*</i>	—	-0.324***
		(-0.64)	<i>HIDOCOV</i>		(-3.36)
<i>NOBD</i>	+	-0.049	<i>FAM</i>	+/-	0.352***
		(-1.21)			(7.31)
<i>OUTDIR</i>	+	0.059	<i>NOBD</i>	—	-0.006
		(0.17)			(-0.39)
<i>GROUP</i>	+	0.266*	<i>INST</i>	+	0.675***
		(1.86)			(4.37)
<i>INVOPP</i>	+	17.193***	<i>INVOPP</i>	+	-0.026
		(8.76)			(-0.05)
<i>CFO</i>	+	1.836***	<i>RETVOL</i>	—	-313.173***
		(3.25)			(-4.22)
<i>CFOVOL</i>	—	0.016	<i>LEV</i>	—	-0.453**
		(1.55)			(-2.11)
<i>LEV</i>	—	-1.809***	<i>SIZE</i>	—	-0.065**
		(-4.28)			(-2.03)
<i>ROA</i>	+	0.114	<i>AGE</i>	—	-0.010***
		(0.19)			(-3.08)
<i>SIZE</i>	+	0.237***			
		(4.10)			
<i>Year dummies</i>		Included	<i>Year dummies</i>		Included
<i>Industry dummies</i>		Included	<i>Industry dummies</i>		Included
Pseudo-R ²		0.145	Adjusted-R ²		0.186
n		1,775	n		1,446

Table 10 Alternative Over-Investment Measure

This table reports the analysis of alternative measure of over-investment. The alternative over-investment measure is the ratio of net increase in fixed assets to total fixed assets in the beginning of fiscal year. *EXDOCOV* is the residual derived from the regression of D&O insurance coverage on determinants of D&O insurance. *CEOOWN* is the percentage of CEO stock ownership. *NOBD* is the total number of directors on the board. *OUTDIR* is the percentage of outside directors that sit on the board. *GROUP* is an indicator variable equal to one if parent company is a group company and zero for otherwise. *INVOPP* is capital expenditure scaled by lagged total assets. *CFO* is operating cash flow scaled by lagged total assets. *CFOVOL* is the standard deviation of operating cash flows divided by lagged total assets during the past five years scaled by the mean of operating cash flows (divided by

lagged total assets) over the same period. *LEV* is the ratio of total debt to total assets. *ROA* is earnings before extraordinary items divided by lagged total assets. *SIZE* is the natural log of total assets. *NTQ* is the sum of market value of equity and the book value of debt scaled by the book value of total assets at $t+1$. *FAM* is an indicator variable equal to one if the founding family is present in the firm and zero otherwise. *INST* is the percentage of stock held by institutional investors. *RETVOL* is the volatility of stock returns calculated as the natural logarithm of annualized variance of daily return over the current fiscal year. *AGE* is the number of years since first date of incorporation. Year and industry fixed effects are included but not reported for brevity. *t*-statistics, based on robust standard errors with firm-level clustering, are given in parentheses. *, **, ***: statistically significantly different from zero at the 10%, 5%, and 1% level (two-tailed), respectively.

Variables	Dependent variable: <i>OVERINV</i>		Variables	Dependent variable: <i>NTQ</i>	
	Predicted sign	Coefficient (t-statistic)		Predicted sign	Coefficient (t-statistic)
<i>Intercept</i>	?	0.676** (2.32)	<i>Intercept</i>	?	2.230*** (5.32)
<i>EXDOCOV</i>	+	1.274*** (3.55)	<i>OVERINV</i>	—	-0.017 (-0.35)
<i>CEOOWN</i>	+	2.161 (1.26)	<i>EXDOCOV</i>	—	-1.105** (-2.44)
<i>CEOOWN</i> ²	—	-1.528 (-1.60)	<i>OVERINV*EXDOC</i>	—	-0.963*** (-3.84)
<i>NOBD</i>	+	-0.009 (-1.29)	<i>OV</i>	+/—	0.345*** (7.18)
<i>OUTDIR</i>	+	-0.035 (-0.52)	<i>FAM</i>	—	-0.007 (-0.48)
<i>GROUP</i>	+	0.065** (2.10)	<i>NOBD</i>	—	-0.007 (-0.48)
<i>INVOPP</i>	+	0.107*** (4.52)	<i>INST</i>	+	0.627*** (4.04)
<i>CFO</i>	+	0.879*** (5.16)	<i>INVOPP</i>	+	-0.057 (-0.10)
<i>CFOVOL</i>	—	0.001 (0.28)	<i>RETVOL</i>	—	-320.708*** (-4.43)
<i>LEV</i>	—	-0.644*** (-5.54)	<i>LEV</i>	—	-3.429** (-2.11)
<i>ROA</i>	+	0.205	<i>SIZE</i>	—	-0.076*** (-2.72)
			<i>AGE</i>	—	-0.009***

		(1.00)		(-3.16)
<i>SIZE</i>	+	0.025*		
		(1.69)		
<i>Year dummies</i>		Included	<i>Year dummies</i>	Included
<i>Industry dummies</i>		Included	<i>Industry dummies</i>	Included
Adjusted-R ²		0.121	Adjusted-R ²	0.193
n		1,775	n	1,446

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Fund Managers' WeChat Behavior, IPO Underpricing, and Earnings Volatility

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Abstract

The personality traits of investors play a direct and important role in their investments. This study extracts personality traits from the WeChat profiles of fund managers in China to assess their neurotic tendencies in order to explain their investment behaviors. We find that for single fund managers, IPO discounting is more common among those who post real photos, real names, and have relatively high personal information transparency, especially managers with a close-up headshot. However, when both single fund managers and multi-fund managers are considered, this effect is much less significant. Finally, we find that these “neurotic” managers’ performance risk is lower than that of others.

Keywords: WeChat; Personality Traits; Fund Manager; IPO underpricing; Performance Risk

1. Introduction

Social media (e.g., Facebook, Twitter) have developed rapidly in recent years. In China, WeChat has thrived since it first appeared in 2011, having over 400 million users at the end of the second quarter in 2014. WeChat is the main social media service after QQ and Weibo. Given that social media record hard information about users’ words, interests, and behaviors, could these networks also reflect soft information about users such as personality traits? Meaning, are the personality characteristics that social networking behaviors reflect an extension of the real person or are they complementary? With the rapid development of social media, several studies on Internet user personality traits have emerged (Kraut et al., 1998; Amichai-Hamburger and Ben-Artzi, 2000; Amichai-Hamburger, 2005; Guadagno et al., 2008;

Amichai-Hamburger et al., 2008; Ross et al., 2009; Amichai-Hamburger and Vinitzky, 2010). Currently, in the mainstream Big Five model theory (Costa and McCrae, 1992), personal characteristics are classified into five traits: openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism. Amichai-Hamburger and Vinitzky (2010) found that social media users who post real photos as profile pictures are prone to be neurotic. Moreover, Amichai-Hamburger (2002) indicates that neurotic people perceive themselves positively in the real world and are more likely to reveal private information to their online friends (Guadagno et al., 2008). However, most of the messages they share are pessimistic. One explanation for this may be that neurotic users are prone to moodiness and are more sensitive (Karl et al., 2010). Thus, we consider users who reveal extensive personal information via social media to be neurotic and more sensitive to risk.

Although there are many studies about the capital markets and the Internet, these are generally: a macroscopic view analyzing the information value of the Internet (Tetlock, 2007; Chen et al., 2011); an investor attention perspective, discussing the relationship between media coverage and stock earnings (Barber and Odean, 2008; Hou et al., 2009), capital pricing (Hirshleifer and Teoh, 2003; Peng and Xiong, 2006), and stock price prediction (Da et al., 2011); or an investor emotional perspective, investigating the effects on the capital market using text analysis methods (Chen et al., 2014). No prior study has examined the relationship between the online behavior of capital market fund managers and their investments such as initial public offering (IPO) book-building pricing and earnings fluctuations in their managed funds. Moreover, most prior studies lack a micro-theoretical foundation in psychology and sociology. Fund manager behavior and investment results can be additionally analyzed from a personality perspective. Therefore, combining relevant psychological and sociological results (Costa and McCrae, 1992; Kraut et al., 1998; Amichai-Hamburger and Vinitzky, 2010), we aim to analyze the influence of fund managers' personality traits, reflected in their social media behaviors, on their investments. In this study, we collect data about the fund managers' neurotic characteristics using their WeChat behaviors and correlate their neurotic tendencies with IPO underpricing, and earnings volatility.

Following Banczyk et al. (2008) and Amichai-Hamburger and Vinitzky (2010), we gather WeChat data (e.g., photos and nicknames) for all stock and bond fund managers who participated in an IPO book-building phase in early 2014. Further, we calculate the earnings volatilities of funds under or previously under these managers. The results show that the IPO underpricing phenomenon is more prominent among fund managers who use real photos and real names on WeChat, indicating relatively high personal information transparency; particularly those manager with a close-up headshot. However, when both single- and

multi-fund managers are considered, this effect is much less significant. Finally, we find that these managers' performance risk is lower than that of others.

The rest of the paper is as follows: section 2 describes the data and model specifications; section 3 presents empirical results including descriptive statistics, IPO underpricing, and earnings volatility and the robustness check, and section 4 presents the conclusion.

2. Data and Descriptive statistics

2.1 Data

Since IPO inquiry in China witnessed a major change in 2014, the sample period is January 1, 2014 to March 31, 2014. During that time, 50 companies launched IPOs, and 450 stock and blend fund managers¹ took part in an IPO book-building phase, offering 16,638 prices and responding numbers. From the WeChat homepages of these fund managers, we manually gather photos, nicknames, and work location information (specific to the prefecture level city), etc. We then establish an information transparency index (*Info_trans*) using the following criteria: the photo variable (*P*) equals 1 if the manager uses a real photo, and 0 otherwise; and the nickname variable (*Name*) equals 1 if the manager uses a real name, and 0 otherwise. The variables for company of employment (*work_company*) and work location (*Work_place*) are dealt with similarly. We obtain the information transparency index by adding the values of these four variables; thus, the value of *Info_trans* is between 0 and 4, the higher the *Info_trans*, the more real personal information is revealed; therefore, the more the manager is classified as neurotic. By excluding incomplete data, we get WeChat information from 312 fund managers².

During IPO discounting in early 2014, these 312 fund managers offered 16,638 inquiry prices and responding numbers. Since in China, each manager can provide at most three prices and numbers for an IPO company, we calculate a quantity-weighted price for each manager for each inquiry company. Through this, we get 5229 book-building prices. We then compute IPO underpricing in two categories: *Premium_1* and *Premium_2*, the managers' inquiry prices divided by the 30-day average closing price after IPO and the managers' book-building prices divided by issue price, respectively.

For earnings fluctuation, we collect historical performance data of funds under or previously under the supervision of the 312 managers as of March 31, 2014. We then calculate annualized returns volatility to represent earnings fluctuation, obtaining 1075 data points.

¹ There are three types of funds in China, namely Bond funds, Blend funds, and Equity funds. In this paper, we analyze Blend funds and Equity funds.

² Fund management generally involves a single-fund (each fund supervised by one manager) and a multi-fund (each fund administrated by at least two managers). For multi-funds, we choose the longest-serving manager.

Finally, we control for some factors at the enterprise level (e.g., firm age), fund company level (e.g., fund scale), and the manager's personal level (e.g., education). Our market data mainly comes from the CSMAR Database; the data was verified using the WIND and RESSET³Databases.

2.2 Descriptive statistics

Table 1 presents the summary statistics. Approximately 21.2% of the managers used real photos, and 49.7% of them used real names; however, both median values are 0. Further, the mean of information transparency is 0.744; that is, only about 18.6% (0.744 divided by 4) of the 312 managers are willing to reveal some private information. The mean and median of *IPO underpricing_1* and *IPO underpricing_2* are close to 0.55 (lower than 1), indicating that these fund managers tend to offer lower prices and therefore, the IPO underpricing phenomenon exists. However, the mean of the annualized fund returns is 15.4%, and the median is 18.2%, illustrating that fund earnings are relatively highly uncertain in China.

Table 1 Descriptive statistics

Variable	Mean	Median	S.D.	N
<i>P</i>	0.212	0.000	0.409	312
<i>Name</i>	0.497	0.000	0.501	312
<i>Info_trans</i>	0.744	1.000	0.679	312
<i>Premium_1</i>	0.549	0.541	0.151	3469
<i>Premium_2</i>	0.548	0.542	0.150	5229
<i>Earnings</i>				
<i>Volatility</i>	0.154	0.182	0.097	1075

3. Empirical Results

3.1 Model Specification

To study the relationship between the fund managers' WeChat behaviors and IPO underpricing, we proposed equation (1):

$$Pr = \beta_0 + \beta_1 Personality + \beta_2 Age + \beta_3 Underwriter + \beta_4 PLEV + \beta_5 GEM + \beta_6 Supply + \beta_7 Liq + \beta_8 Size + \beta_9 PROE + \beta_{10} Scale + \beta_{11} LAROwn + \beta_{12} Volume + \varepsilon \quad (1)$$

where the dependent variable *Pr* represents IPO underpricing *Premium_1* or *Premium_2*. *Personality* is the independent variable representing photo *P*, nickname *Name*, and information transparency *Info_trans*, respectively. The control variables are: previous year's profitability (*PROE*), the return on equity the year before the IPO, previous year's capital structures (*PLEV*), capital ratios the year before the IPO, previous year's ownership structure (*LAROwn*), the share proportion of the first shareholder the year before the IPO, number of years since the company was established (*Age*) as $\ln(1 + \text{the number of years since the})$

³ CSMAR, WIND and RESSET are the three mainstream finance database in China mainland, especially CSMAR is the only one China provider to WRDS data service system.

company was listed), issuing scale (*Size*) as $\text{Ln}(1 + \text{the actual funds raised in 100 million yuan})$, and the IPO underwriters' reputation (*Underwriter*), ranking of three years' underwriting capital amount before the IPO. If the underwriter is among the top 10, it equals 1; 0 otherwise; IPO supplies (*Supply*) as $\text{Ln}(1 + \text{other companies' money raised during the 30-day period before the IPO and on the issue day in 100 million yuan})$, listed sectors (*GEM*) is a dummy variable, if the company is listed on the GEM market board, it equals 1; 0 otherwise; structure of the issue (*Liq*) is the ratio of public offerings to the total number of shares issued, declaration of scale (*Volume*) as $\text{Ln}(1 + \text{book-building number in 10,000})$, and fund size (*Scale*) as $\text{Ln}(1 + \text{capital scale of fund in 100 million yuan})$.

In terms of the fluctuations in fund performance, we analyze the effect of the fund managers' WeChat behavior on risk management using equation (2):

$$\begin{aligned} \text{Risk} = & \beta_0 + \beta_1 \text{Personality} + \beta_2 \text{Scale} + \beta_3 \text{Work_year} + \beta_4 \text{Man_Years} \\ & + \beta_5 \text{Man_Age} + \beta_6 \text{Funds} + \beta_7 \text{Market_Risk} + \beta_8 \text{CPA} + \beta_9 \text{EDU} + \varepsilon \end{aligned} \quad (2)$$

where *Risk* stands for the annualized return volatilities of the funds under or previously under the supervision of the managers as of March 31, 2014. The independent variable *Personality* represents photo *P*, nickname *Name*, and information transparency *Info_trans*. The control variables are: fund size (*Scale*) as $\text{Ln}(1 + \text{capital scale of fund in 100 million yuan})$, working time of fund managers (*Work_year*) as $\text{Ln}(1 + \text{number of working years at the end of tenure})$, time under manager (*Man_years*) as $\text{Ln}(1 + \text{years under this manager's supervision})$; for funds still administrated by the manager, timing ends on March 31, 2014; fund manager age (*Man_Age*) as $\text{Ln}(1 + \text{age of manager when he/she was managing the fund})$; for those managers who do not state their age, we assume they are 22 at undergraduate degree completion, 25 at master degree completion, and 27 at Ph.D. completion; the number of funds the fund company has (*Fund_num*) as $\text{Ln}(1 + \text{number of funds at the manager's employment company})$; stock market fluctuations (*Market_Risk*) is CSI 300 volatility during fund manager's tenure; professional certification (*CPA*) reflects the manager's financial management capability and is a dummy variable, if the manager has a CPA certificate, it equals 1; 0 otherwise; Manager's academic degree (*EDU*) is a dummy variable, if the manager has a master or Ph.D. degree, it equals 1; 0 otherwise.

3.2 WeChat and IPO underpricing

3.2.1 Basic analysis

Fund management generally involves single-funds (each fund supervised by one manager) and multi-funds (each fund supervised by at least two managers), thus we analyze the book-building prices of single-fund managers and all fund managers (including multi-fund managers), respectively.

Table 2 Regression results of fund managers' WeChat behaviors and IPO underpricing

Variable	Premium 1						Premium 2	
	(I)			(II)			(III)	(IV)
Constant	0.472* ** (13.022)	0.475* ** (13.108)	0.480* ** (13.224)	0.452* ** (15.766)	0.453* ** (15.805)	0.454*** (15.804)	1.020** * (5.191)	0.962*** (6.616)
P	-0.011* (-1.770)			-0.008* (-1.898)				
Name		-0.010* * (-2.318)			-0.009* * (-2.532)			
Info_trans			-0.010* ** (-2.922)			-0.006** (-2.112)		
P_Dis							-0.054* * (-2.183)	-0.031* (-1.770)
Age	-0.098* ** (-6.282)	-0.098* ** (-6.277)	-0.097* ** (-6.244)	-0.087* ** (-7.064)	-0.087* ** (-7.074)	-0.087** * (-7.062)	0.131 (1.575)	0.122** (2.018)
Underwriter	0.018* ** (3.177)	0.018* ** (3.203)	0.018* ** (3.251)	0.017* ** (3.813)	0.017* ** (3.78)	0.017*** (3.806)	0.181** * (6.560)	0.216*** (10.008)
PLEV	0.054* ** (4.330)	0.054* ** (4.356)	0.054* ** (4.356)	0.048* ** (4.837)	0.048* ** (4.804)	0.048*** (4.816)	0.170** * (2.665)	0.185*** (3.874)
GEM	0.067* ** (10.933)	0.068* ** (10.968)	0.067* ** (10.960)	0.066* ** (13.351)	0.066* ** (13.390)	0.066*** (13.379)	0.036 (1.184)	0.080*** (3.403)
Supply	-0.079* ** (-11.570)	-0.079* ** (-11.515)	-0.079* ** (-11.534)	-0.081* ** (-14.886)	-0.081* ** (-14.862)	-0.081** * (-14.856)	-0.071* * (-2.090)	-0.136** * (-5.137)
Liq	0.034* * (2.119)	0.033* * (2.090)	0.033* * (2.068)	0.032* * (2.515)	0.031* * (2.46)	0.031** (2.469)	0.329** * (4.092)	0.275*** (4.456)
Size	0.333* ** (24.122)	0.332* ** (24.077)	0.332* ** (24.105)	0.329* ** (29.849)	0.329* ** (29.881)	0.329*** (29.851)	-0.196* ** (-2.832)	-0.088 (-1.627)
PROE	0.587* ** (12.074)	0.588* ** (12.098)	0.587* ** (12.074)	0.639* ** (16.513)	0.639* ** (16.525)	0.639*** (16.511)	0.694** * (2.828)	0.902*** (4.862)

<i>Scale</i>	0.012* * (2.061)	0.011* (1.896)	0.011* * (1.962)	0.014* ** (-3.362)	0.015* ** (3.521)	0.014*** (3.345)	0.063** (2.030)	0.043* (1.785)
<i>LAROwn</i>	-0.146* ** (-9.127)	-0.146* ** (-9.110)	-0.145* ** (-9.042)	-0.152* ** (-11.83)	-0.152* ** (-11.87)	-0.152** * (-11.849)	-0.149* (-1.827)	-0.251** * (-4.125)
<i>Voium</i>	-0.019* * (-2.232)	-0.019* * (-2.208)	-0.020* * (-2.369)	-0.017* * (-2.481)	-0.017* * (-2.467)	-0.017** (-2.454)	-0.173* ** (-3.566)	-0.124** * (-3.406)
<i>Adj.-R²</i>	0.269	0.269	0.270	0.285	0.285	0.285	0.097	0.122
<i>No. obs.</i>	3469	3469	3469	5229	5229	5229	811	1267

Notes: This table presents regression results of equation (1) for single-fund managers (column I and III) and all fund managers (column II and IV). The dependent variable contains two categories: Premium_1 and Premium_2, the former is managers' book- building prices divided by the 30-day average closing price after IPO, the latter is managers' book- building prices divided by issue price. The independent variables are photo P, nickname Name, personal information transparency Info_trans, and figure proportion of the fund manager's profile pictures P_Dis. The control variables are: previous year's profitability (PROE), previous year's capital structures (PLEV), previous year's ownership structure (LAROwn), number of years since the company was established (Age), issuing scale (Size), the IPO underwriters' reputation (Underwriter), IPO supplies (Supply), listed sectors (GEM), structure of the issue (Liq), declaration of scale (Volume), and fund size (Scale). *t*-values are in parentheses.

*, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 2, column (I) presents the results of estimating equation (1) for single-fund managers. The coefficients of the fund managers' photos, nicknames, and information transparency are significantly negative, particularly for managers who use their real names as their WeChat nicknames. These managers' book-building prices are often about 1% lower than the book-building prices of others. This result suggests that neurotic managers are more sensitive to risk, leading to significant IPO underpricing. Table 2, column (II) shows the regression results for all managers (single- and multi-fund managers). The variables are found to be significantly negative, although the absolute values of the coefficients decrease slightly, indicating that the managers' book prices are still markedly lower; however, the gap is smaller. One explanation may be that an individual's characteristics may be mitigated by other members of the team.

3.2.2 Further analysis: Proportions of fund managers' photos

The figure proportion of photos (i.e., the area in the photo taken up by the manager's face) is positively correlated to the managers' desire to reveal personal information. According to the Big Five personality model (Costa and McCrae, 1992), these managers have greater neuroses and are more sensitive to risk. In other words, they are more risk-averse. Among fund managers with real photos as their profile pictures, many of their figure proportions are over 50%. Therefore, we expect the booking prices of these managers to be lower than others.

We set a dummy variable (P_Dis) presenting figure proportion of the fund managers' profile pictures, equaling 1 if the figure proportion is greater than 50%, and 0 otherwise. Further, unlike in the preceding section, we use the IPO underpricing $Premium_2$ here.

Table 2, column (III) and column (IV) reveal the regression results for the figure proportion of the photos. Although the coefficients of figure proportion for both single fund managers and all managers are significantly less than 0, the absolute values are higher. Thus, there is a higher degree of IPO underpricing. This result is consistent with our expectations. The higher the managers' figure proportions, the greater the chances that the managers have neurotic personalities. Therefore, their investments would be more conservative, leading to lower IPO booking prices and greater degrees of underpricing.

3.3 WeChat behavior and earnings volatility

For fund managers with neurotic tendencies, their risk-aversion would certainly affect their investments, not only in IPO book-building pricing but also in terms of earnings volatility. After controlling for other factors at the fund level and manager personal level, we study the relationship between the behaviors of the 312 managers and earnings risks.

Table 3 Regression Results of Fund Managers' WeChat behaviors and *Earnings Volatility*

Variable	Dependent Variable: <i>Earnings Volatility</i>		
<i>Constant</i>	-0.402** (-2.121)	-0.291 (-1.518)	-0.284 (-1.494)
<i>P</i>	-0.011* (-1.709)		
<i>Name</i>		-0.018*** (-3.310)	
<i>Info_trans</i>			-0.016*** (-4.218)
<i>Scale</i>	0.036*** (6.830)	0.036*** (6.726)	0.035*** (6.625)
<i>Work_year</i>	0.045*** (3.417)	0.044*** (3.366)	0.045*** (3.450)
<i>Man_years</i>	-0.119** (-2.467)	-0.100** (-2.077)	-0.098** (-2.030)
<i>Man_Age</i>	0.356** (2.352)	0.273* (1.790)	0.276* (1.823)
<i>Fund_num</i>	-0.030** (-2.274)	-0.031** (-2.354)	-0.035*** (-2.668)
<i>Market_Risk</i>	0.066*** (8.136)	0.066*** (8.213)	0.065*** (8.088)
<i>CPA</i>	-0.015* (-1.797)	-0.016* (-1.853)	-0.017** (-1.964)
<i>EDU</i>	0.022 (1.403)	0.031** (2.002)	0.029* (1.866)
<i>Adjusted-R²</i>	0.165	0.171	0.177
<i>N</i>	1075	1075	1075

Notes: This table presents regression results of equation (2). The dependent variable is *Earnings Volatility*, which is defined as annualized return volatilities of funds that are or used to be under the fund managers' supervision as of March 31, 2014. The independent variables are photo *P*, nickname *Name*, and personal information transparency *Info_trans*. The control variables are: fund size (*Scale*), working time of fund managers (*Work_year*), time under his/her management (*Man_years*), fund managers' age (*Man_Age*), number of funds that the fund company has (*Fund_num*), stock market fluctuations (*Market_Risk*), professional certification (*CPA*) that reflects the manager's financial resources management capability, and managers' academic degree (*EDU*). *t*-values are in parentheses.

*, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 3 presents the results of equation (2). The coefficients of photos, nicknames, and information transparency are significantly negative, indicating lower earnings volatility among funds managed by neurotic managers, about 2% below other equity fund managers. This finding is in line with our expectations. Managers with higher personal information transparency have stronger neurotic tendencies, therefore tend to be more risk-averse; thus, the earnings volatility of their funds will be relatively low.

3.4 Robustness check⁴

For IPO underpricing, we calculate IPO underpricing *Premium_2* using issue price; similar results were found. The regression coefficients of the fund managers' photos, nicknames, and information transparency are still significantly negative. Regarding earnings volatilities, the findings of the robustness check resemble the original results, with risks computed by the standard deviation approach.

4. Conclusion

Based on the Big Five model (Costa and McCrae, 1992) and Amichai-Hamburger and Vinitzky's (2010) research, we collected data from WeChat on profile pictures, nicknames used, as well as information transparency, as a reflection of fund managers' neurotic tendencies. This study examined the relationship among fund managers' WeChat behaviors, IPO underpricing, and earnings volatility. The results show that the IPO underpricing is more prominent among single fund managers with real photos, real names, and relatively high personal information transparency, and especially among those with high photo figure proportions. However, when considering multi-fund managers as well, this effect is much less significant. Finally, we find that these neurotic managers have lower performance risk.

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⁴ For brevity, the empirical results are not presented in the paper; these are available upon request.

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Credit Contagion and Counterparties Risk

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Abstract

This study examines the effects of financially distressful events on corporate trade and its financial counterparties. The findings suggest that only the most acute corporate financial distress events lead to significantly negative wealth effects on their counterparties, especially for trade debtors and creditors. The adverse effects have also been found in financial institution creditors, but the effects are weaker and temporary. In addition, we found that the degree of risk exposure for trade creditors and the dependence on trade debtors with distressed firms are two significant factors in explaining the spillover effect. The evidence suggests that trade-linkage dominated in the transmission mechanisms of credit contagion, relative to finance-linkage through bank lending.

Keyword: Financial Distress, Counterparty Risk, Credit Contagion

1. Introduction

Numerous studies have recently been devoted to default risk. Most of these have focused on refining the estimation of the default probabilities of individual firms [9, 10, 23]. However, default events do not often occur independently. As a firm suffers financial distress, its stakeholders, such as industry rivals, supply chain counterparties, financial institution creditors, and even debtors, are affected, which may lead to a “domino effect” [7, 6, 24]. Therefore, in addition to default probability and potential losses in default events, default correlation is essential to understanding the risk of credit portfolios. If common events simultaneously affect each firm’s default risk, the default of individual firms will cluster and show positive correlations. This phenomenon is called “credit contagion” [20, 26]. However, the explanations of a restrictive common-economic-factor structure or a negative shock to cash flows across industries¹ are insufficient to fit the empirical findings on credit contagion

¹ [17, 11] suggested that bankruptcy reveals the information content about the cash flow of intra-industry rivals

[13, 6, 25, 8] and [14] suggested that credit contagion not only depends on macroeconomic and/or industry factors but also on counterparty risk factors, which may lead to simultaneous defaults through the relationship of trade credit and loan activities among firms. For example, a firm's financial distress events may make its cash flows insufficient to cover contractually required payments, requiring financial restructuring with its creditors or equity investors. However, these studies were mentioned above concentrated only on the performance of distress firms themselves, there are no more discusses on their credit counterparties.

[15, 16] firstly and empirically explored the credit contagion effects of firm bankruptcy and highlighted the importance of the counterparty risk factor. They suggested that a creditor with greater exposure to the distressed firm is more likely to be negatively affected by the bankruptcy and financial-institution creditors are less affected by credit losses in bankruptcy events than industrial creditors. However, their paper focused only on the spillover effects on creditors, but did not investigate the impact on debtors/customers. Despite the impressive results obtained in previous studies, it is questionable that such default events could provide market investors with additional information content about their credit counterparties. Additional, previous studies upon counterparty risk issue have focused on bankruptcy events (e.g., [17, 15, 16, 3]), which are ex post default events, and the negative information available before the bankruptcy news announcements. For this reason, events revealed less information content of bankruptcy firms and counterparties to investors.

Therefore, this paper analyzes a financial distress sample set of Taiwanese firms that experienced various degrees of credit risk. In this paper, we address two questions. First, we assess how the intensity of various financial distress events affects stock returns and trade credit policy of distressed firms. Second, we also estimate the impact of conveying diverse financial distress events on their different creditor counterparties. This paper makes several contributions to the literature. First, unlike the bankruptcy filing event adopted by [16], the first paper to present direct empirical evidence of counterparty risk, we use seven financial distress events, classified into three categories by their probability of default. We can thus assess the impact of various financial distress events on corporate counterparties. Second, in addition to creditors, we selected debtors of distressed firms as our observed sample. It is necessary to examine the impacts of distress events on debtors. The claims of creditors may deteriorate if the distress events convey information about an increasing likelihood of default, which implies difficulty in the distressed firm fulfilling its debt obligations. At the same time, debtors may sell their assets at a fire-sale price to release their obligation. Alternatively, their indebtedness may also lessen temporarily before distressed firms go into liquidation as a result of bankruptcy. Hence, it is also necessary to discern the debtor-owned features and the net effect for debtors. Third, we consider the impact of various transmission channels of financial distress events. That is, we separately examine the responses of industrial creditors

and prompts investors to reevaluate the stock prices of rivals.

and financial institution creditors as [16]. The results of this study will have implications for the specification of the default risk model, the construction and management of credit-sensitive portfolios, and the formation of corporate credit decisions.

The rest of the paper is organized as follows. Section 2 describes our data and methodology, and Section 3 examines the stock-price response of distressed firms' counterparties to the release of financial distress news. We also report the cross-sectional regression analyses. The final section summarizes our findings.

2. Data and sample

2.1. Financial distress events in Taiwan

The factors that contribute to financial distress need not be the same factors that motivate bankruptcy filing. Therefore, we selected our sample distress-firm from the *Taiwan Economic Journal* (TEJ) database, which classifies financial distress events into various types. In addition, these types of distress are categorized into three groups, according to the severity of default risk by the Taiwan Credit Rating Index (TCRI) of the TEJ database. The first four events are categorized as "Core Default" which is the most likely type of default. The next two events are classified as "Presumed by Specific Financial Events". The last event (full-cash delivery or delisting) belongs to the "Judged by Experience" group. The sample period of our study was from January 1, 1998 to December 31, 2013. Our sample encompassed 203 distressed firms for which stock prices and financial statement data were available and for which we were able to calculate abnormal returns related to distress-event announcements.

2.2. Identification of counterparty

Once distressed firms are identified, we collected their corresponding non-distressed counterparties. In general, counterparties include financial institutions and industrial firms. For financial institution creditors, we selected those non-distressed financial institutions that had at least two years' loan contracts with the distressed firm, and retained the credit relationship when the financial distress event happened. Publicly available databases exist that provide industrial creditors' and debtors' data. We collected those data by searching for specific keywords in each distressed firm's annual report, released one year before the distress events. Industrial creditors were selected using the following keywords: "sale on credit", "accounts receivable", "financing", and "endorsement". Using the keywords "purchase on credit", "accounts payable", and "important contracts", we identified the industrial debtors of distressed firms in the sample. Notably, the selected industrial creditors and debtors had not encountered any financially distressful incidents.

Finally, we identified 523 industrial creditors, 452 financial institutions creditors, and 275 industrial debtors of distressed firms. By nature, firms have more loan relationships with financial institutions than trade relationships and more trade relationships with industrial

creditors than loan relationships. Among them, trade type indicates business on credit, loan type indicates that distressed firms have a contract with banks for funding, leasing, and guaranty endorsement, and service type indicates a relationship of brokerage, agency, or outsourcing. Most counterparties that belong to trade relation and industrial creditors contribute over half of observations. In total, we examined 1,250 corresponding counterparties.

3. Contagion effect of distress events

3.1. Event study method

The purpose of this paper is to investigate the market reaction of credit counterparty around financial distress. In this subsection we examine the market reaction of distressed firms' counterparties in a period when the financial distress news is announced. To solve the possible autocorrelation problem caused by coinciding event days, we classified each distressed firm's industrial creditor, financial creditor, and industrial debtor counterparty into three separate portfolios and calculated their equally-weighted portfolio return. On average, there are 2.8 firms in the creditor portfolio. Then, we assessed the wealth-effect by applying the standard-event study method to estimate cumulative abnormal returns (CARs) for each counterparty portfolio. First, we define the announcement date as the event date. Then we calculate abnormal returns (AR_t) for each distressed firm and counterparty at time t using the market-adjusted return model developed by [4, 22]. The market index was measured by the TAIEX value-weighted index for Taiwan Stock Exchange Corporation (TWSE) stocks, with parameters estimated over a window ranging from 273 days prior to the event date to 21 days prior to the event date, and adjusted using the GARCH (1, 1) model.

3.2. Wealth effect for the counterparties of distressed firms

Relative to firm bankruptcy, financial distress events appear to occur more frequently and are unexpected by the market. Thus, the announcement of the event may offer additional information to investors and permit them to quantify the effects of wealth on counterparties. We examined whether the wealth effects differed across three kinds of counterparties: industrial creditors, financial-institution creditors, and industrial debtors. The average CARs surrounding distress news announcements are presented in Table 1. The results indicate that the counterparty, whether creditor or debtor portfolio, on average, exhibited a negative abnormal equity return in most of the event windows. The percentage of firms with negative returns was significantly higher than 50%, indicating that this finding was not skewed by irregular observations. However, compared with industrial creditors, industrial debtors exhibited a larger negative stock price reaction. In addition, the contagion effect persisted over longer window periods.

Financial institutions are another important external funding source for a firm. We found that, for financial-institution creditor portfolios, the average CARs are still statistically negative,

but the impacts are less than those of industrial creditors. This result is similar to that of [5, 16], which suggest that financial-institution counterparties are less affected by credit losses in bankruptcy events than industrial counterparties. The idiosyncratic characteristics of financial institutions could partially explain the above findings. In general, the major loan policy of financial institutions is to diversify their loan portfolios across various industries. Thus, risk exposure to any single distressed firm is much smaller than that firm's equity assets, and most long-term loan contracts are guaranteed. In Panel B of Table 1, we report the *t*-test statistics of significance in mean differences of CAR among three counterparties. We find that both the CAR (-1, +1) and CAR (-2, +2) of industrial-debtor portfolios were significantly more negative than financial-institution credit portfolios. The results thus provide evidence that adverse contagion effects exist for distressed-firm counterparties, and are especially pronounced for industrial creditors and debtors.

Table 1 Wealth effect for the counterparties of distressed firms – classified by types of counterparties

This table presents the mean cumulative abnormal returns measured by the market-adjusted return model for credit counterparties surrounding distress news announcements. Day 0 represents the announcement date. Panel A shows the estimated results by types of counterparties. Panel B reports the mean difference test results by three various distress-event groups. The *t*-statistics are derived from Newey-West heteroskedasticity and autocorrelation consistent standard errors. The “% <0” entry represents the percentage of observations with negative values and the significance of statistics was assessed by sign test. The superscripts ***, **, and * indicate statistically significance at 1%, 5% and 10% level, respectively.

Panel A: By types of counterparties

Windows	Industrial Creditors			Industrial Debtors			Financial		Institution
	CAR	t-stat.	% <0	CAR	t-stat.	% <0	CAR	t-stat.	% <0
(-1, +1)	-0.25**	-2.35	56.2***	-0.53***	-3.12	53.5	-0.23**	-2.05	62.4***
(-2, +2)	-0.39***	-2.69	54.5**	-0.75***	-2.88	53.8	-0.26*	-1.87	58.8***
(-5, +5)	-0.50**	-2.30	57.2***	-0.84**	-2.32	52.7	-0.12	-0.6	54.9*
(-5, +20)	-0.75*	-1.92	54.7**	-1.52**	-2.21	54.2	0.16	0.52	52.0
No.	of 523			275			452		

Panel B: Tests in mean difference of CAR

	CAR (-1,+1) (%)	CAR (-2,+2) (%)	CAR (-5,+5)
Industrial creditors vs. financial institution creditors	-0.392	-1.121	-1.004
Industrial creditors vs. industrial debtors	1.204	1.220	0.648
Financial institution creditors vs. industrial debtors	1.941**	2.711***	1.745**

3.3. Effect of the intensity of financial distress events

To assess how contagion effects are linked to the intensity of financial distress events, we examined whether contagion effects differed across various default groups by dividing the distress-events sample into three distress-event groups: “core default”, “presumed by specific financial events”, and “judge by experience”.

Panel A of Table 2 shows the average cumulative abnormal return of counterparties in the core default event group. We found evidence that the core default event group expressed the most severe contagion effects on each counterparty portfolio. Panel B shows the results of presumed by specific financial events groups. We found that the cumulative abnormal return of industrial creditors over the (-2, +2) and (-5, +5) windows were statistically negative at the

10% level or better, using the *t*-test. For industrial debtors and financial institution creditors, the cumulative abnormal returns of the presumed by specific financial events news announcements were both statistically insignificant. In sum, Table 2 shows that the announcements of core default events lead to a substantial wealth deterioration for the counterparties, and the effects are persistent over longer windows.

Table 2 Wealth effect for the counterparties of distressed firms—classified by distress-event group

This table reports the mean cumulative abnormal returns measured by the market-adjusted return model for credit counterparties classified by distress-event group surrounding distress news announcements. The *t*-statistics are derived from Newey-West heteroskedasticity and autocorrelation consistent standard errors. The “% <0” entry represents the percentage of observations with negative values and the significance of statistics was assessed by sign test. The superscripts ***, **, and * indicate statistically significance at 1%, 5% and 10% level, respectively.

Windows	Industrial Creditors			Industrial Debtors			Financial Institution Creditors		
	CAR (%)	t-stat.	% <0	CAR (%)	t-stat.	% <0	CAR (%)	t-stat.	% <0
<i>Panel A: Core default</i>									
(-1, +1)	-0.24*	-1.76	55.2*	-0.76***	-3.02	55.1	-0.36***	-3.25	63.4***
(-2, +2)	-0.41**	-2.15	54.1*	-1.28***	-3.22	55.7	-0.34**	-2.32	60.1***
(-5, +5)	-0.44**	-1.51	56.6***	-1.28**	-2.31	53.3	-0.10	-0.47	54.5
(-5, +20)	-1.08**	-2.02	56.4**	-2.34**	-2.17	52.1	0.27	0.81	50.6
No. of obs.	362			167			391		
<i>Panel B: Presumed by specific financial events</i>									
(-1, +1)	-0.27	-1.63	59.5**	-0.21	-1.14	51.5	0.84	1.87	52.7
(-2, +2)	-0.34*	-1.75	55.4	0.05	0.24	50.5	0.29	0.63	54.5
(-5, +5)	-0.67**	-2.31	58.1*	-0.33	-0.98	54.4	-0.21	-0.39	56.4
(-5, +20)	0.07	0.16	51.4	-0.57	-1.09	60.2*	-0.59	-0.78	61.8
No. of obs.	148			103			55		

3.4. Is counterparty effect or intra-industry information spillover?

Whether the contagion effect on counterparty firms we had found was purely due to the credit contract relationship with distressed firms (counterparty effect)? And whether the contagion effect on counterparty firms was probably due to their intra-industry information spillover? At the same time, we could not distinguish the contagion effect on counterparty firms was due to distressed announcement or industry shock. These confuses would more serious as distressed firms and counterparty firms were in the same industry. This situation would have more discussion later. For this concern, we used matched-control sample approach to strengthen our analysis. [2, 21] found that abnormal returns using matching portfolios of similar firms gave well specified tests. The specific matching algorithm was as follows. We

first identified all firms on TEJ that were not in our distress and counterparty sample and that had size and performance data available for the year prior to announcement. From these firms, matching firms were chosen for each of the industrial creditors and industrial debtors counterparty on the basis of industry, asset size, and prior operating performance along the lines suggested by [1] and implemented by [19, 18]. we identified a matched-control firm sequentially that had the same industry classified by TEJ database as that of the counterparty sample firms of announcing firms, then was the closet size for each firm in the counterparty sample. We also required that there were at least five firms within that size group. Besides, without matching on prior performance, results could be confounding as it was unclear whether the observed abnormal returns were due to mean reversion or due to the event under consideration. Lastly, from the firms with similar size, we selected the one with the closest past performance. The performance was measured by the firm's return on assets (ROA) measured as operating income before depreciation divided by total assets between 90% and 110% of the counterparty firm in the year prior to the distress announcement. The range filter yielded well-specified test statistics in [1]. If no matching firm was available that meet these criteria, we relaxed and choose the firm that was closest in performance.

3.5. Cross-sectional regression analysis

To further assess the drivers of contagion effects and the extent to which they are related to the characteristics of distressed firms and their counterparties, we performed a cross-sectional regression analysis. The model specification for creditors is:

$$CAR_C(-1, +1) = \alpha + \beta_1 CAR_K(-1, +1) + \beta_2 CAR_K(-1, +1) \times D_{core} + \beta_3 EXP_{CK} + \beta_4 VOL_C + \beta_5 HHI_C + \varepsilon_C \quad (1)$$

where subscripts C and K denote C -th creditor and K -th distressed firm. The dependent variable, $CAR_C(-1, +1)$ is defined as the cumulative abnormal stock return for the industrial- or the financial institution-creditor counterparty portfolio over -1 to +1 days, relative to the distress-news announcement date describing the stock performance of the creditors. The purpose of this paper is to examine the contagion effect of distress events on counterparties. Hence, we refined the regression model by investigating how the CARs of the distressed firms (CAR_K) affected the CAR_C , to reveal the contagion effect on abnormal equity return. We focused on the coefficient of CAR_K and predicted that it would be significantly positive if the contagion effect existed. In addition, we considered that the intensity of financial distress events may influence the extent of the wealth effect on counterparties. That is, the counterparty of distressed firms with core default events may experience substantially negative abnormal returns. We then included an interactive term of CAR_K and D_{core} to test whether the default possibility of a distress event is a dominant factor. D_{core} was a dummy variable that equaled one for distressed firms experiencing core default events, and zero for distressed firms not experiencing core default events. Namely, if the coefficient of the interactive term was significantly positive, the contagion effect from the distressed firms on

their counterparties was more pronounced for core default events. [12] indicated that the impact of the additional contagion-induced effects depended on the degree of connectedness between firms. The EXP_{CK} is the measurement of the exposure risk of creditors on distressed firms. The EXP_{CK} was calculated by the ratio of the amount of credit contracts between creditors and distressed firms to the market value of equity on creditors. [16] suggested that a creditor with greater exposure to the distressed firm is more likely to be negatively affected by the bankruptcy. We therefore predicted that the coefficient on EXP_{CK} would be negative. Lastly, we also added several control variables which have influenced the CAR_C . VOL_C is the stock-return volatility of the creditor for the year preceding the distress event announcement, which was included to control the influence of the future default probability of the counterparties. Prior studies have suggested that firms with higher volatility are more exposed to adverse shock effects from their borrowers. We therefore predicted negative coefficients for VOL_C . HHI_C represents the Herfindahl index for the industry of creditors in the previous year, calculated as the sum of the squared fractions of each individual firm's sales over the total sales of the industry. This variable is used to control the impact of market power on stock return. We predicted that the counterparties with more concentrated industries (higher HHI values) are more likely to mitigate wealth deterioration from the distressed firms.

To consider how the influence of distress events on debtors may differ from those on creditors, we constructed another regression model for debtors. The preliminary evidence shows that distress events produce significant contagion effects on the stock return of counterparties. To further affirm this effect, we employed a cross-sectional regression analysis. The coefficients of CAR_K were all positive and significant at the 10% level or better, before accounting for other potentially influential factors. We found preliminary support for contagion effects. After we included the interactive term of CAR_K and D_{Core} and other control variables in the regression model, the coefficients of CAR_K were insignificant. But the coefficients on the interactive term of CAR_K and D_{Core} were significantly positive at the 5% level or better for industrial creditors and debtors, indicating that those distress events with a high default risk led to industrial counterparties suffering from more substantial adverse-announcement effects. As for financial-institution creditors, as predicted, no evidence existed to confirm an effect on the shareholders' wealth on the date of the distress news announcement. In summary, we found substantially adverse contagion effects of the core-default-event announcement on industrial creditors and debtors.

4. Conclusion

The wealth effects of financial distress news announcements on the credit counterparties of distressed firms have received little attention in empirical studies. This paper employed a unique and comprehensive corporate distress events database in Taiwan from 1998 to 2013,

and classified 203 sample events into three distress-event groups, according to the extent of the probability of default. We investigated whether the intensity of financial distress events resulted in distinct market effects on industrial creditors, industrial debtors, and financial-institution creditors.

The empirical findings show that credit counterparties are negatively affected by the news announcements of the distress events, and that shareholder wealth experienced a significant negative influence. In addition, when we classified sample distress events into three distress groups according to their default probability, we found that only the most acute financial distress events led to significantly negative wealth effects on corporate counterparties, especially for industrial debtors. The adverse effects have also been found in financial institution creditors, but the effects are weaker and temporary. This evidence suggests that the trade linkage dominated in the transmission mechanisms of credit contagion, relative to finance linkage through bank lending. The results of the cross-sectional regression analyses also suggest that the degree of risk exposure of trade creditors is an important factor associated with credit contagion effects.

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BREFM-22372

Integrating Macroeconomics and Environmental Features for Real Estate Pricing Function

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Abstract

Information unbalance in real estate market is severe influencing how to reasonably price real estate for practitioners and buyers. The purpose of the study is to establish real estate pricing model in a given region using Black and Scholes theory and integration of the macroeconomics and environmental features concepts. A comprehensive literature review is carried out to identify the macroeconomics and environmental features, followed by function development in a mathematical way. The pricing model derived from Black Scholes theory will be established using financial engineering philosophy. Extra real cases collected will be used to demonstrate model implementation and evaluation. The evaluation based on the real transaction data of 4178 sets shows that the weight of external features is 4.51 times greater than that of internal features. The reasonable price growth in a regional urban is in a range of 2% to 17% dependent on district locations. The findings benefit both academia and industry in establishing pricing model for a given region and in determining the profit margin for real estate developers.

Keywords: real estate, macroeconomics, environmental features, Black and Scholes, financial engineering.

BREFM- 22424
Does Prior Gain Promote Lotto Sales

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Abstract

The minor difference of the numbers selection in lotto game might change the bettors' psychological attitude in terms of deciding whether to gamble continuously or not. By using the unique lottery data in Taiwan, we investigate whether house money effect or near wins effect will promote more lotto sales in next period after controlling the demand factors. Consist with house money effect, our empirical results present that the players buy more lottery tickets after the previous wins. The near wins with matching only two winning numbers does not encourage lotto players to buy more lottery tickets in next drawing. We suggest that lottery operators should set more easily hitting prize to increase lotto sales because house money effect indeed exists in lotto market.

Key words: lottery sales, near wins, gambling

JEL Classification: D81, L83

BREFM-22417

The Fair Cost of Violation of the Country-of-Origin Labeling in Korea

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The country-of-origin labeling (COL) is critically important in the era of market liberalization. Korea signed the free trade agreement with China in 2014, which is the 14th agreement since the Korea-Chile FTA in 2004. The agricultural market in Korea is fully opened for competition with producers from all over the world. The COL can provide a protection to domestic agricultural products from cheaper imported ones under the FTAs. It prevents illegal distributions that disguise imported agricultural products as domestic, thereby protects domestic farmers and consumers. In most countries, it is operated to mark as a food label to distinguish domestic products from imported ones.

The Korean government mandates to mark the country-of-origin on all agricultural products since 1991. Its implementation rate steadily increases from 62.2% in 1994 to 96.4% in 2014. However, there are still considerable violation of the COL regulation. And the number is increasing from 1,698 cases in 2005 to 2,725 cases in 2014.

One of the major reasons of the high rate of COL violation is that the effective punishment is weaker than the economic benefits from the violation. For instance, a manufacturer of makgeolli, the Korean traditional alcoholic beverage with rice, took benefits from cheating the country-of-origin of rice about \$40,000 in 2011. However, he was only imposed the penalty of \$1,800. The net benefit from the cheating would encourage the violation of COL regulation.

The previous studies are only concerned about the management system of the country-of-origin, benefit-cost analyses on labeling with qualitative approaches. The objective of this study is to seek fair levels of penalty to be imposed on violations of COL regulation. For that, we first build up the model of social benefit and cost analysis. Then we calculate the penalty levels that matches benefits from cheating.

The method adopted in this study can also be used to design a fair and economic scheme of penalty for smuggling and other economic offenses alike.



BREFM-22379

A Study on Marketing Strategies of the Conventional Industries in Taiwan

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The conventional industries in Taiwan used to bring out the economic miracle. Those conventional industries not only provide a stable society and a prosperous city but create lots of employment opportunities and they could maintain social stability as well. However, the global economic environment has changed as time goes by. Because Taiwan has been a part of the WTO organization, there would be lots of competitions from all over the world. Therefore, the pressure of changing and managing the conventional industries increases a lot. In recent years, the economic statistics indicates, the GDP growth in Taiwan will slow and the business condition would not be good enough next year and also, there are some competitions overseas and the environmental protection policy. Due to the cost of production is getting higher, many factories and stores has moved away so the unemployment increased in Taiwan. The flying-geese model could explain how the conventional industries will face with the impact and this would be a good topic to be studied how we could come back from the recession. The study is analyzed by some case studies, Porter five forces analysis and SWOT analysis. The final results could provide some references for the owners of the conventional industries.

Keywords: conventional industries, WTO, Porter five forces analysis, SWOT Analysis

BREFM-22554

Perceived Intellectual Value and Perceived Sensitive Value on Cosmetic Websites

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Abstract

There were more than 17 million Internet users in Taiwan, while nearly 67% women in Taiwan had online shopping experience. Cosmetic companies need to run attractive campaigns or post promotion information on their websites to attract customers browsing their websites and ultimately generating interests in their products. This study aimed to investigate the relationship between perceived interactivity with companies' websites and customers' purchasing intentions through two mediating variables, perceived intellectual value and perceived sensitive value. Perceived interactivity was measured by four dimensions: two-way communication, the speed of response, nonverbal information, and information quality.

This study collected 349 valid responses from female cosmetic consumers through an online survey in Taiwan. The results indicated that the speeds of response, nonverbal information, and information quality had positive effects on perceived sensitive value, whereas two-way communication, nonverbal information, and information quality had positive effects on perceived intellectual value. Compared to other dimensions, information quality had the strongest effect on both perceived sensitive value and perceived intellectual value. The research results could help cosmetic companies forming their Internet marketing strategy. Future researchers could investigate the effect of brand preference on online customer's purchasing behavior.

Keywords: two-way communication, speeds of response, nonverbal information, information quality, perceived interactivity, perceived sensitive value, perceived intellectual value, purchasing intention

ISBSS-4600

**Organization's Responsibility as a Contingency Factor Affecting Health
Journalists' Perceptions of Conflict Issues**

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Abstract

This study raises the question of whether public perceptions of an organization's crisis responsibility could be a contingent factor to the conflict continuum and resulting conflict management strategies. Because the public attributes some responsibility for the conflict to an organization, the organization's response is necessary in dealing with the conflict and, ultimately, in minimizing the harm from the conflict. In other words, the stances and strategies of an organization are associated with the public attribution of responsibility. This study, therefore, aims to examine the causal effects of public relations contingencies on an organization's stance and strategy toward the public through the lens of public perceptions of organizational crisis responsibility. This study examines whether health journalists' perceptions of crisis responsibility affect their expectations that public relations practitioners should choose certain stances and strategies toward the public in certain circumstances. To address these concerns, this study conducts an experiment with health journalists.

Results showed that the perception of crisis responsibility was highly supported by the experimental data of this research as a valid influence on the expectations of an organization's stance and strategy. The findings establish that health journalists' perceptions of an organization's crisis responsibility can be a new contingency factor affecting their expectations of the organization's stance and strategy in a crisis. In particular, health journalists' perceptions of an organization's crisis responsibility can be added to the list of contingency factors as a situational variable, one that is highly likely to influence how an organization relates to an external public. This new contingency factor will not only contribute to practitioners' ability to monitor the environment and to choose stances and strategies of communication to journalists, but will also extend the ability of scholars and theorists to manage the factors in meaningful ways. The findings of this study indicate that health journalists' perceptions of an organization's responsibility in a health-related crisis affect their expectations of its stance and strategy. Specifically, health journalists are likely to expect a more accommodative stance and strategy when they perceive that the organization has a high level of responsibility. From the perspective of health communication, these findings suggest that journalists have a pro-social attitude (they care about the welfare and

rights of their audience) and seem to act in ways that they feel benefit their audience. Health journalists' subtle social activism could be attributed to their perceived adversarial role as journalists. Researchers (Jeong, Len-Rios, Hinnant, & Cameron, 2009) explain that health journalists' adversarial role is related to their strong perceptions that health stories concern the reader's well-being. This study provides a necessary addition to the development of public relations theory and acts as a launching point for subsequent research. In practical application, the results of this study add to the body of knowledge regarding the influence of public relations practitioners on the media, particularly in the health field, and may help practitioners to profit from their strategic conflict management decisions in response to a crisis.

Keywords: Public relations, health journalist, conflict management communication, crisis responsibility, contingency theory

ISBSS-4601
A Scale for the Evaluation of Honorary Ambassadors

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Abstract

Many contemporary organizations appoint celebrities as their honorary ambassadors, in order to execute strategic public relations activities and enhance their public images. For example, Federation Internationale de Football Association appointed Pele, who is the world's most famous soccer player, as its 2014 World Cup honorary ambassador. Public relations scholars have studied the influence of honorary ambassadors on public relations by exploring the diverse activities of celebrity ambassadors. However, few studies have systematically examined what standards public relations practitioners consider in evaluating and appointing honorary ambassadors to organizations and involving them in their public relations activities. In acknowledging the void of research on the field, this study investigates standards that practitioners use to appoint honorary ambassadors. This study develops a measurement scale for evaluating honorary ambassadors by engaging in a series of scale development methods. It then suggests a unidimensional evaluation scale for useful measurement.

Researchers conducted an extensive literature review, carried out interviews with experts, examined their reviews, performed a pilot test, and administered online surveys to Korean public relations practitioners and based the proposed scale on refined statistics, including a structural equation model. As a result, 26 items emerged that could be grouped within eight factors that affect organizations' appointment of an honorary ambassador: attraction, trustworthiness, charisma, influence, expertise, uniqueness, similarity, and congruence. The results of this study have several important implications regarding both theory and practice in public relations. Most importantly, this study represents a pioneering endeavor to provide a theoretical foundation for the selection of the most appropriate honorary ambassador for an organization, based on a measurement scale. Moreover, it proposes the use of a unidimensional evaluation scale for useful measurement, created by rigorously testing a large pool of items for their reliability and validity and performing second-order confirmatory factor analysis. This scale goes beyond the instinctive or indiscriminate, making it possible

for organizations to appoint honorary ambassadors on an interpersonal basis. It can also be used in future research as a tool for empirical and scientific measurement at the organizational level. This study provides an approach that can be used in future research, in which scholars can further empirically explore influential predictors for the appointment of honorary ambassadors, as well as the specific communication effects of appointing ambassadors, by using the developed scale. It also advances public relations theory and offers a promising synthesis of practice by integrating several theoretical frameworks regarding celebrity endorsement in advertising into one scale that can be applied to honorary ambassadors. This study verifies that the eight factors and 26 measurement items in its scale, which are drawn from diverse accepted theories in advertising, are reliable. On a practical level, the factors that this study has investigated can be regarded as guidelines for practitioners, which can be used to maximize the practical usage of honorary ambassadors. The scientifically and systematically investigated measurement scale in this study should give practitioners confidence in appointing the most fitting ambassadors and determining their appropriate practices. The measurement scale can be used to evaluate ambassador candidates, determine which ones are best, simplify the process of choosing an ambassador, produce more positive public relations effects, and ultimately achieve the aims of their client organizations.

Keywords: honorary ambassador, endorser, scale development, public relations

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**A Morphological Analysis of Joss Paper Image in Taiwan - A Case Study of
Fu Lu Shou**

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Abstract

Based on the Fu Lu Shou joss papers, the current study investigated the religious tradition of the joss paper burning as well as the styling features, purposes, and types of the three-god joss paper via the examination of previous studies and the field work. With the collected joss papers for different purposes, six samples with the three gods were extracted to decipher the componential principles of the three-god patterns, arrangement of printed characters, and decorative frames. Besides, with the joss papers for different purposes, the current study compared and analyzed the styling features of the three god images, the complexity-simplicity transformation style and embedded connotation.

The results of the current study revealed that the Fu, Lu, and Shou joss paper could be divided into Taijijin (a.k.a. Tiangongjin) for the heaven and gods, Shoujin for gods and Buddha, and Kanjin for ancestors or spirits. With differences in personality features and religious expectations, the three gods differ not only in styling components such as the head, the costume, and objects held in hand, but also in prices, material quality, and worship connotations of joss paper. In terms of pattern design, the use of density of lines and blocks to highlight the contrast between black and white, as well as the simplification as a result of integration and omission displays the transformation from complexity to simplicity. Taijijin and Shoujin are more obvious in its components and differentiation between each part, and more elaborate and complete in the depiction of lines and blocks. While Kanjin features the interconnection, integration, and omission of each part, it keeps focuses of the original components and could tell the character features among the three gods.

Keyword: Fu Lu Shou, joss paper, pattern, culture, Taiwan

1. Introduction

1.1 Study Background and Motivation

To religions around the globe, physical worship, confession, or worship of gods and icons are major means to express followers' pious respect and to seek for spiritual sustenance. Different religions have specific worship ceremonies, such as silent prayer with folded palms or the cross for Christianity and Catholicism. In Chinese societies, incense offering, sutra chanting, and joss paper burning are practiced in Taoism and Buddhism. In the worship ceremonies, various gods, totems, offerings, or ritual instruments are used for different purposes and intentions. The materials and forms these objects present symbolize different religious meanings and imply profound cultural connotation.

In terms of the folk beliefs in Taiwan, people express their respects and sincerity for gods via burning joss paper, hoping to bring good luck and ward off calamities. Joss paper is also burned for ancestors or spirits so that they have money to spend with in the Underworld. Meanwhile, the notion of hierarchy in the world corresponds to the forms, patterns, sizes, and material quality of the joss paper, since the targets for worship have class differentiation. When it comes to the joss paper for rituals, Tiangongjin or Taijijin is burned for Tiangong (i.e., Jade Emperor, the ruler of heaven), Shoujin is for average gods or Buddha, while Jingyi given exclusively to ancestral spirits. The purposes and patterns of joss paper are diverse and contain profound religious meanings, constructing a set of complicated knowledge system. Therefore, research into the diverse patterns of joss paper based on designing is a complicated issue worth investigation in greater depth.

1.2 Study Method and Purpose

Through the examination of previous studies and the field work, the current study, based on the Fu Lu Shou joss paper commonly seen in the god and ancestor worship ceremonies, first investigated the religious tradition of the joss paper burning as well as the styling features, purposes, and types of the three-god joss paper. Second, with the collection of relevant patterns of the three-god joss paper, six samples were extracted to decipher the componential principles of the three-god patterns, including styling features, components, arrangement of printed characters, and decorative frames. Besides, the current study compared and analyzed the complexity-simplicity transformation style and embedded connotation that the three gods had with regard to their appearance on the joss paper of different purposes.

2. Literature Review

The study takes the Fu Lu Shou joss paper commonly used for examples to explore the origin, connotation and form of expression of Fu, Lu and Shou in the folk beliefs to conduct literary analysis. Secondly, the study provides a further discussion in the light of joss paper type of

graphic design and applicable form of Fu, Lu and Shou, and related theories about the contract and abstract conformation and the component rules of art and graphic design.

2.1 Origins and the significance of modeling of religions for Fu Lu Shou three stars

The three gods on joss paper (i.e., Fu, Lu, and Shou), a.k.a. Cai Zi Shou, came from Taoism and folk legends and first appeared as “Fu Lu Shou three stars the Old Men of the South Pole” in Jinlu Qishou Zaochao Yi in early Ming Dynasty. In the modern society, the three gods often appear in folk engraving (Figure1), joss paper (Figure2), paper-cut, year calendar (plane objects), or gifts for longevity, porcelain crafts, traditional temple forms (Figure3), glove puppetry and actors’ dressing (Figure4) in traditional dramas (three-dimensional objects).

Traditionally, they are arranged with Fu star in the middle, Shou star on the left, and Lu on the left. Sometimes there might be a left-right reversal arrangement. The Fu star refers to the Tein Guan star in Zi Wei Dou Shu, symbolizing prosperity. Therefore, the Fu star features the costume of high officials or noble lords in ancient China, a round face, cleverness, competence, with an officer cap on the head and a “A gift of happiness” scroll (or a Ruyi jade tablet, a sycee) in hand. The Lu star refers to the Tein Chu star in Zi Wei Dou Shu. People in the Song Dynasty worshiped the spirit of Zitong (Wenchang Dijun, the God of Culture and Literature), who was in charge of positions and riches and featured the appearance of high position and handsome salary, with a Ruyi scepter or Shaku. After the Five Dynasties, with the wrong interpretation of “The Baby Delivery Zhang Xian” attached, the folks often depicted the Lu star as a rich landowner carrying a baby, symbolizing the rich landowner delivers babies. The Shou star refers to the Old Man of the South Pole in Zi Wei Dou Shu, featuring his high, domed forehead and the stick or peach which he carries as a symbol of immortality (Sung, Keein, 2003).



Figure1: New Year Picture of Fu Lu Shou, Photo Taken From [8]

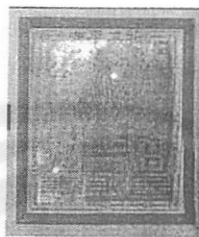


Figure2: Fu Lu Shou Dinjijin, Taken in The Spot in 2015/03



Figure 2: Fu Lu Shou in God Temple of Tainan City, Photo Taken From [9]



Figure 3: Fu Lu Shou Theatre Costume, Photo Taken From [10]

2.2 The Origin and Species of Joss Paper

According to traditional beliefs and legends, joss paper burning is related to Cai Lun, the inventor of paper, in the Eastern Han Dynasty. However, The Notes of Feng depicted god or spirit worship via burying elongated pointed tablet of jades, jaspers, coins, and silks. Baoqian (bronze coin) was used as mortuary objects in the Han Dynasty and had been replaced by joss paper since the Six Dynasties. In the Tang Dynasty, joss paper burning for funerals was popular, whether the nobles or the commonalty. Joss paper is traditionally made from coarse bamboo paper and patterns are traditionally reproduced mostly with wood engraving, while letterpress is used for printing nowadays. Since joss paper is burned immediately after the god or ancestor worship, traditional patterns focus on the simple linear composition. Low printing cost of the modern machines makes it easy to mass produce concrete or abstract patterns. Gold paper, with gold foil on it, is burned for gods or used to pray for blessings, such as Fu Lu Shou Dinjijin or Shoujin. Silver paper, with silver foil on it, is burned for ancestors or spirits.

2.3 Graphic Design from Contract to Abstract Expressions

The composition of art or graphic design contains both contract and abstract expressions, and simplification is an important technique in abstraction. Important features are extracted from complex details and transformed into understandable simple lines or geometric forms. Based on Pablo Picasso's (1881-1973) Bull, a series of lithographs created in 1945-46 (take Figure 5a-Figure 4d for examples) (Yeh, Kuo-Sung & Chang, Huei-Ming, 1991), the current study elaborated on related abstraction process. Figure 4-a shows a realistic sketch of a bull. In Figure 5-b, a strong and solid shape of a bull could still be observed. However, lines are used to dissect the creature into black areas, and detailed shapes of eyes, ears, and noses are simplified. In Figure 5-c, detailed depictions of the bull are simplified. Destructions with intersectional lines and a few sections make it hard to observe the strong shape of a bull, displaying a symbolic form. In Figure 5-d, the bull is reduced to a simple outline, displaying an abstract image.

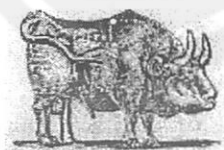


Figure
Realistic Bull



4-a: Figure 5-b: Splitted
Bull



Figure 5-c: Line
and Planar Bull

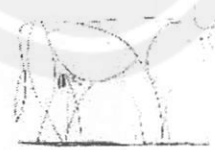


Figure 5-d: Bull of
Abstract Linetype

3. Collection of Documents and Fact-Finding

3.1 Investigative Method and Implementation







In addition to the photos taken from the field work, the current study took reference from Chang's Secrets of Gold/Silver Papers as well as online information. Fu Lu Shou joss paper designed for different purposes was collected, among which 6 samples with diverse details were screened out (see Table 1).

Moreover, during January and February 2005, owners of joss paper shops in Xiluo Township and Douliu Township were interviewed to explain the types, production styles, and applications of different joss papers.

3.2 Illustration of Samples of Joss Paper

Based on the hierarchy of the objects to be worshiped, the samples in Table 1 differed in the composition patterns, sizes, and paper textures, which could be further divided into three major types. First, Taijijin (a.k.a. Tiangongjin) for Tiangong (i.e., Jade Emperor, the ruler of heaven) was larger in size, printed in a vertical rectangle, and soft in texture (see Sample 1 and 2). Second, Shoujin for average gods or Buddha, was relatively smaller and printed in a horizontal square (a.k.a. Square paper, see Sample 3 and 4). Third, Kanjin for ancestors or spirits printed in a horizontal square was the smallest in size and the roughest in texture (see Sample 5 and 6).

Table 1: Samples of Fu Lu Shou Joss Paper

Taijijin	Shoujin	Kanjin
		
Sample 1 : Taijijin 1	Sample 3 : Shoujin 1	Sample 5 : Kanjin 1
		
Sample 2 : Taijijin 2	Sample 4 : Shoujin 2	Sample 6 : Kanjin 2

3.3 The Components of Sample Images

In terms of shared features of styling compositions, all the six samples in Table 2 contained three components: main images of Fu Lu Shou, decorative frames, and text frames. Analyses and discussions were as follows:

Subject image: For constructions of the main images shown in Taijijin and Shoujin (see Sample 1 to Sample 4), detailed features such as the head, the costume, and objects held in hand were depicted in a complicated fashion. To Kanjin, however, the texts were omitted, the styling composition was clearly simplified, and a left-right reversal arrangement between the Lu star and the Shou star was common.



















Decoration for outer Frame: The outermost was thick line frame, while the inner was a thin line frame of Winding Pattern, symbolizing the endless prosperity and auspiciousness of Fu Lu Shou.

Text box: Sample 1 to Sample 4 were burned for gods or Buddha, with “Praying for safety” inscribed on the fretted line frame, symbolizing the prayer for safety and smoothness. “Yuan Long” represented pouring profits and prosperous business. Sample 5 and Sample 6 were burned for lower level spirits, thus inscription was not included.

4. A Morphological Analysis of the patterns of the Fu, Lu, and Shou joss paper

The three gods in the six samples (see Table 1) were further divided into 18 sub-samples that contained respectively Fu, Lu, and Shou (see Table 2). Sub-samples with different images of the three gods were analyzed based on symbolic meanings, styling components, complexity-simplicity transformation of styling features, and connotation of styling simplification.

Table 2: Sample Classification of Fu Lu Shou Image

Type	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6
a. Fu						
	1-a	2-a	3-a	4-a	5-a	6-a
b. Lu						
	1-b	2-b	3-b	4-b	5-b	6-b
c. Shou						
	1-c	2-c	3-c	4-c	5-c	6-c

4.1 The Symbolic Meanings and Styling Components of The Three Gods

According to the styling features and embedded connotations of the aforementioned 2.1 Fu Lu Shou gods, components of the main images of the six samples listed in Table 2 were as follows:

Fu star : The Fu star refers to the Tein Guan star, symbolizing prosperity. Therefore, the Fu star features the costume of high officials or noble lords in ancient China, a round face, an officer cap on the head, and a “Fu” (i.e., happiness) scroll or a jade tablet (i.e., a Ruyi jade tablet, a sycee) in hand.

Lu star : The Lu star refers to the Tein Chu star (a.k.a. Wenchang Dijun, the God of Culture and Literature), who was in charge of positions and riches. After the Five Dynasties, with the wrong interpretation of “The Baby Delivery Zhang Xian” attached, the folks often depicted

the Lu star as a rich landowner carrying a baby, symbolizing the rich landowner delivers babies.

Shou star : The Shou star refers to the Old Man of the South Pole, featuring his high, domed forehead and the stick or peach which he carries as a symbol of immortality(Sung, Keein, 2003).

4.2 Complexity-Simplicity Transformation of Styling Features of the Three Gods

Based on the 18 sub-samples in Table 2 (a set of six samples for each god), the current study analyzed the complexity-simplicity transformation and styling features of each set in terms of the head, the costume, and objects held in hand.

The heads of the three gods shown in Table 2 indicated that the Fu star featured the costume of high officials or noble lords, an officer cap with two horizontal stripes on the head, and a round face. The Lu star was depicted as a rich round-faced landowner, with his cap covering his neck and hanging down the shoulder. The Shou star was depicted as a long-lived old man, with a domed forehead. Long beards could be seen among the three gods. Facial details in Sample 1 to Sample 44 suggested that each part (eyebrows, eyes, nose, mouth, and beards) was clearly depicted with lines, and that three-dimensional depiction could be observed in eyes and nose. The three gods in Sample 1, in particular, clearly showed their eyeballs. However, obvious simplification was noticed in Sample 5 and Sample 6, where eyes and mouths were presented with lines or spots and some parts were combined, such as the connection of eyebrows and the pendant of the officer cap in 6-a, beards and clothes in 5-a and 5-b, as well as mouth and beards in 6-b and 6-c. With regard to the shape of cap, the Fu star and the Lu star in Sample 1 to Sample 4 featured decorative patterns of lines and contrasting black and white dots to present the three-dimensional effect and to show the direction of the face (right or left). However, in Sample 5 and Sample 6, the shape of the cap and decorative patterns were simplified and transformed into simple lines or blocks.

The three gods in Table 2 differed in costumes because of their personalities, with gorgeous officer costume for the Fu star, wealthy landowner costume for the Lu star, and an elder in robes for the Shou star. In Sample 1 and Sample 2, lines or white spots on a black background clearly differentiated the levels and details of the upper body, the lower body, two sleeves, and gestures. Besides, the beards and the upper body were masterly blended, such as 1-b and 2-c. In Sample 3 and Sample 4, levels of each part were combined, omitted, or simplified, and transformed into line compositions or symmetrical geometric styling with long stripes, such as simplifying the decorative patterns of the upper body and the lower body to symmetrical geometric styling (see 3-a, 4-a), combining the upper body with the decorations of the cap (see 4-b), and omitting two sleeves and gestures into simplified blocks or arcs (see 3-c, 4-c).

Objects held in hand by the three gods shown in Table 2 yielded differences based on different symbolic connotation the role had. The Fu star symbolized prosperity and high

officials, with a “Fu” (i.e., happiness) scroll or a jade tablet (i.e., a Ruyi jade tablet, a sycee) in hand. A “Fu” scroll was held right in front of the chest, with detailed decorative pattern depiction (see 1-a). Ruyi jade tablet was held in hand, as observed in 2-a and 3-a. 5-a showed a slanting Ruyi jade tablet in the left clothes, where gestures were omitted. Simplification existed in 6-a, with objects held in hand omitted. The Lu star symbolized the rich landowner delivers babies. In Table 2, only 2-a showed a baby face and baby clothing in front of the chest. 4-b was simplified into an oval arc and human form could not be observed, making it hard to infer its symbolic objects, The Shou star was a long-lived old man carrying a stick. Straight and thick depiction of sticks appeared among all the six samples. The curved surface depicted with white spots on a black background symbolized the head of the peach stick (see 1-c). The curved line in 5-c and short curve in 6-c were connected with the body, where the head of the stick was used to symbolize its image.

4.3 The Rules of Styling Component of Images of The Three Gods

To sum up, different purposes and types of the Fu Lu Shou three star joss papers led to various facial expressions, head depictions, cap decorations, costumes, and objects held in hand. The complexity-simplicity transformation could be generalized as the following three rules:

Simplification principle of density of lines: Simplification was mainly reached via costume styling. In Sample 1 and Sample 2, the upper body, the lower body, and two sleeves were depicted in detail with straight lines, zigzags, and curved lines. However, in 4-a, 4-b, and 5-a, obvious regional combination or omission was observed, with simple lines used to depict symmetrical geometric styling.

Styling principle of white spots on a black block: Such styling principle was used mainly for the cap patterns of the Lu star (ex. 1-b, 2-b, 4-b, 5-b) or for the costumes, such as the upper clothes in 1-a and the lower clothes in 3-b and 3-c.

Simplification principle of combination and omission: Such simplification principle was used mainly for the combination of each part or the integration of clothes levels. In Sample 4 to Sample 6, for example, combinations between the head and the upper body, the upper clothes with the lower clothes, or the object in hand with the clothes were obvious. In Sample 6, in particular, each component was omitted or combined for multiple times, and was simplified into the styling features of the main parts.

5. Conclusions

In view of the above, the study takes Fu, Lu, and Shou for examples to explore the purposes and the types that the folk beliefs in Taiwan burn joss paper, 18 components of sample, complexity-simplicity transformation style of image and embedded connotation. The following are conclusions for this study.

To folk beliefs in Taiwan, different classes of the worship targets lead to diverse types and purposes of joss paper burning. The results of the current study revealed that the Fu, Lu, and Shou joss paper could be divided into Taijijin (a.k.a. Tiangongjin) for the heaven and gods, Shoujin for gods and Buddha, and Kanjin for ancestors or spirits.

With differences in personality features and worship purposes, the patterns of the Fu, Lu, and Shou joss paper also differ in styling components such as the face, decorations of the hat, costume, and objects held in hand. Taijijin and Shoujin are more obvious in its components and differentiation between each part, and more elaborate and complete in the depiction of lines and blocks. While Kanjin features the interconnection, integration, and omission of each part, it keeps focuses of the original components and could tell the character features among the three gods. Meanwhile, the Fu, Lu, and Shou joss paper differs in prices, material quality, and worship connotations.

To cater to the tradition that joss paper is immediately burned after the worship or ritual, joss paper printing often adopts wood engraving or letterpress to lower the cost. Therefore, with regard to the pattern design of the three gods, the use of density of lines and blocks to highlight the contrast between black and white, as well as the simplification as a result of integration and omission displays the transformation from complexity to simplicity, showcasing the differences in types.

In religious festivals around Taiwan, joss paper burning could be seen anytime. However, simple sheets of joss paper not only connote the commodity's pious attitude towards worshipping gods, ancestors, and spirits, but also strengthen traditional proprieties and spirits. Patterns of joss paper express the profound philosophies that the commodity possesses towards religious culture and the features of folk art. Moreover, those patterns reflect the commodity's aesthetic and values that keep pace with the times. The results of the current study serve as valuable references for graphic design, folk culture research, and the cultural and creative industry.

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Factor Affecting Critical Success Factors in Sports

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Abstract

The road to successful career in sports is full of challenges, especially if the aim is to compete and excel on the international stage. In addition, to produce more world caliber athletes in a range of sports, a better understanding of qualities that help athletes achieve their goals should be reviewed since success in career is not achieved easily and it requires significant investment such as time, effort, focus, emotional exertion, and personal sacrifice. Therefore, what is needed to be successful and why some people ascend to the top and prosper, while others who are equally talented never reach their expectations? Synthesizing from literature, this paper reviews other research in the area in order to determine factors promoting successful career for athletes. A conceptual framework that takes into consideration the individual, organizational and social dimension that might affect the critical success of sports performance will be discussed and report in this paper.

Keywords:

Critical Success Factors; Organizational factors; Community factors; Culture factors; Sport Performance

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Planning a Design Course for Play Experience and Fab Lab

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Abstract

With the current popularity and widespread use of high-tech and telecommunication products, digital information with varied forms of software, hardware, and multimedia was engaged in designs for entertainment and daily life; its related products are sweeping the globe. On the other hand, the rapid development of 3D printing technology further caused a boom of Fab Lab. To develop designs with strong and rich experiences a designer must be able to fully understand user-experience.

This study will present the thinking of planning a new course with integration of Play, Sci-Fi & Design to share how such course attempt to provide students with learning motives via approaches of play and scenario, and to establish a degree of fun in the learning environment, in order to motivate students to identify the blind spots in the existed situation and to take challenge to learning new experience more directly through participation and interaction in play. This was done by breaking down the barriers between play experience and rapid prototype design of Fab Lab. Based on this thinking the course structure and content was planned and presented in this paper.

Keywords: design course, play experience, Fab Lab, Sci-Fi, prototype.

1. Introduction

In order to close the gap between theory and reality, design courses in the past usually emphasized “learning by doing.” With the current popularity and widespread use of high-tech and telecommunication products, digital information with varied forms of software, hardware, and multimedia was engaged in designs for entertainment and daily life. Related products are

sweeping the globe, and become part of the daily life for consumers, which also further heightened their dependency on IT products. In order to impress consumers, to allow users to escape the confines of reality and just enjoy the pure sense of satisfaction in play, developers for toys and games must first understand the experiences of the users and look for issues of their concerns. Norman (2004) indicated that an object must be rich and complicated, so its constituent elements can create endless interactions. In order to establish an object-user relationship through the object of design, a designer needs two abilities: the ability of creating a strong and rich object-experience and the ability of understanding user-experience. To a new product especially, before going into manufacturing and selling stages, related user-experience must be first discussed. The secret to achieve a successful object-user relationship is "seduction." In order to seduce the consumers, story and process must also be paid attention to. Rodgers & Milton once asked Nendo regarding the skills he employed in developing product concepts, and Nendo replied, "There are a lot of aspects that we must decide, but the story behind the case is the most important one. We never say we are designing a product, but designing a story. The story is everything that is born from the product." On the other hand, process is also an important factor. Kotler & Rath (1990) pointed out that design is the process of seeking to optimize consumer satisfaction and company profitability through the creative use of major design element. Bruce & Bessant (2002) also mentioned a British Standard for the process; in essence there are three broad phases of activity: a planning phase, development phase, production and sales phase.

This study believes that play takes an important role in current product designs, therefore planning design course for next generation must take into account both the logics in design thinking and imaginations in play experience. Brown (2010) believes that for design thinking to successfully work, it must fully integrate insight, observation and empathy to turn "requirements" into "demands." Looking from another angle, the integration of these three elements requires the emotion investment of the designers, so the designers can see, experience, to be in the other person's shoe, and to discover opportunities for designs. Suri & Marsh (2000) used cases of IDEO as examples and suggested the "scenario building" method to assist designers in developing a scenario building mode of interchangeable virtual characters and story scenarios. It can be used as a tool of communication and a prototype of exploration which helps designers in depiction and evaluation of the design process during the initial stages of product concept development. More importantly, it can increase the opportunity to visualize the concept, improve the quality of interactive experience among the users, potential product, and the system, and also utilize a "make real" method to support teams of different fields to understand the situation and overall context before confirming a direction of development. This method creates a series of modes with different demographic casts of characters to depict the operations of real activities, which allow the designer to better grasp the demands of the users and to better response to new technology. Game design

was also created a new world to make attraction for new environments. According to Innocent (2004) identifies the model with five key principles: space, language/ culture, experience design, logic and behavior. On the aspect of design development, in order to look for design opportunities, Battarbee (2001) also used a scenario building method in creating and sharing of experiences, such as recalling a scenario that happened in the “past,” or representing a virtual experience of the “future.” It was a challenge by designer that transform with play experience become a real object from scenario and virtual worlds.

2.Theconnectionbetweenplay And Digitalfabrication

Though the technological advancements have been rapid, there are still no defined methods for assisting designers to motivate the consumers, and to let consumers generate fun in using the product. The renowned Media Lab of MIT (Massachusetts Institute of Technology), embracing the “demo or die” philosophy, provided the diverse workshop activities and inspired Hackathon (hacker + marathon) spirit for their students, to encourage them actively exhibit their works, seek for a cross-industry integration of digital technology, information, and arts in a diverse way, and lead the technological imaginations of the public and the industry. Regarding the study on play, Benyon & Turner (2005) suggested the concept of Infotainment. The word “infotainment” is combined from the words “information” and “entertainment” as integration of two behaviors and concepts, and also as a classic example of the integration of traditional behavior and technology.

Due to the rapid evolution of manufacturing technology, early devices of numerical controls such as CNC (Computerized Numerical Control) or CAM (Computer Aided Manufacturing), have become lightweight and compact, such as the Fabricator (a 3D printer) that fits on a desktop. The rapid development of 3D Printing technology caused a boom in Fab Lab trends, and this “just do it” trait of spontaneity in manufacturing brings diverse possibilities. Tanaka (2012) mentioned that “evolved from digital fabrication, the Fab Labs have also begun to spread among the profession design communities.” Creative designers in product, furniture, fashion, architecture design fields have gradually started to explore the application of this kind of desktop digital fabrication technology. On the other hand, the 3D simulation technology in the gaming and cinema industries further promoted the trends of digital communication and learning in amusement and play experiences.

2.1 The Thinking Structure of Planning a New Design Course with Play, Sci-Fi & FabLab

Overall, this course emphasizes “experience through play,” and is constructed upon the base of play and scenario. Out of which, it is established by the integration of play and toy, and pleasure and adventurous excitement. Enjoyment sits at the cross core of these four elements, as illustrated in Figure 1, and scenario is a connecting bridge between function, technology

and user-experience. It is also through technology that 3D Printing, sensor, RC (Remote Control), VR (Virtual Reality), and manufacture are all connected. During the creating process of scenario and user-experience, the relationship between status, situation, and sensation must also be considered. To complete the thinking structure of this course we suggest to include the 5 critical components of the play spirit: survival challenge (facing with what kinds of pressure to survive), competitiveness (what kind of rewards or punishments would yield from the score), sociability (making friends while playing), dexterity (dexterity of operation), and medium (what kind of method to experience play), as shown in the horizontal dimension of Fig.1.

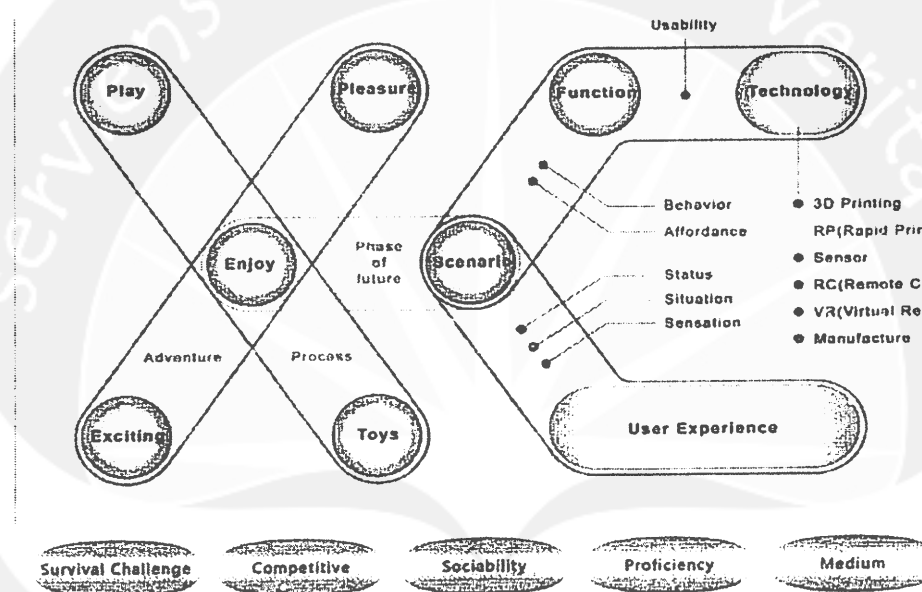


Fig.1: The concept of Thinking Structure for Course Planning

2.2 Activity Planning of the New Design Course

Based on the said background, this course attempts to establish a learning environment with fun for design students, via approaches of play and scenario, in order to motivate students to identify the blind spots in the existed situation and to take challenge to learning new experience more directly through participation and interaction in play. This course is held 3 hours weekly in the fall semester of 2014 in the Institute of Applied Arts (IAA) of the National Chiao Tung University (NTU) of Taiwan. There are 12 students participated in this course, including 9 graduate students, majoring at industrial design or visual communication design, from IAA and 3 graduate students from other departments of NCTU, majoring at architecture, computer engineering and management science, respectively. In order to

encourage students breaking the wall cross between their professional fields, the lecturer of this course has prepared toys and tools, such as darts, light masking devices, buzzers, and various aids, to induce play. For the convenience of teaching, students are grouped as teams of two, and they would identify issues via cross-team discussions.

3 The Proceeding Of This Course

In the aspect of scenarios, attention is paid onto the experience of amusement; through observing the set designs and scenarios in sci-fi movies, participants are stimulated to think on how to prepare for and respond to the dilemmas and challenges humanity may face in the ever-changing world of the future in advance. Because sci-fi stories usually contain imaginations and worries of the future, entangled with expectations of technology progress and fear of the unknown, designers, inspired by sci-fi stories, may conceive a sense of excitement and imaginations differ from the usual product scenarios and come up with interesting metaphors and reflections. Through the scenario stimulations from play, games, and movie plots, it is hoped to inspire the potentials in students to explore new problems. After the course outline is introduced, this course started in the form of gaming directly in the following week. The proceeding of this course includes the following six units:

(1) Unit-1. Discuss the concept of scoring through the game of darts: Using magnetic darts and a 3D Iron Man image as the target, different parts of the target have different points (0 lowest, 100 highest), the students are divided into 6 teams of twos to play, as shown in Fig.2, and the team with the highest score wins. This is done to seduce the students in increasing their shooting precision to generate a sense of fun.

(2) Unit-2. Blocking boxes + making light masking devices: Without identifying the purpose, each student is asked to prepare 5 empty boxes and bring them to the class next week. In the following week, the lecturer arranges the prepared light masking device and alarm (with sound and light) on the table, connects them to power and asks two students to construct a device from 10 boxes (as Fig.3). A foam-thrower is used as a shooting weapon for the boxes. Points are awarded if the fallen or displaced boxes block the light masking device and trigger an alarm sound, and the team with the highest score wins.

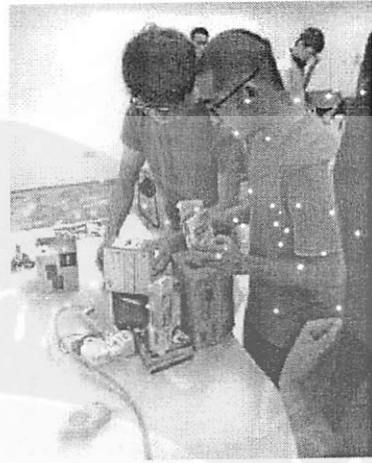
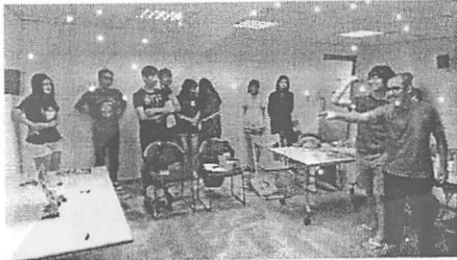


Fig. 2: Using magnetic darts as the target **Fig. 3: Discuss the arrangement of boxes.**

(3) Unit-3. Movie analysis: By analyzing the concept of time and background of Sci-Fi movies, students are asked to discuss how the characters should react in the given scenario, and how the characters utilize sets and the environment to overcome the challenges in the mission. Stories imaginations are usually projections of reality; therefore, the designers can also seek out design topics via “virtuereality scenarios,” look at the world through a contracted or enlarged scale, and create dramatic spatial effects. Designers can directly transform information drawn from reality into imaginary scenarios, and reflect upon statuses, behaviors, operating procedures hidden in real life, or plots in the movie, while also reveal the psychological demands in current products to stimulate imagination, relieve pressure, and provide relaxation for users.

(4) Unit-4. Story telling + box Refining: Through the method of reading comics, students are asked to construct a series of scenario introductions and interactive character dialogues (as Fig.4), then based on the thoughts of interactions to reconstruct boxes from above into a device with a variable mechanism to reflect the weight and movement of the bullets thrown (show as Fig.5~6).



Fig. 4: Shared some constructed series of boxes as city image.

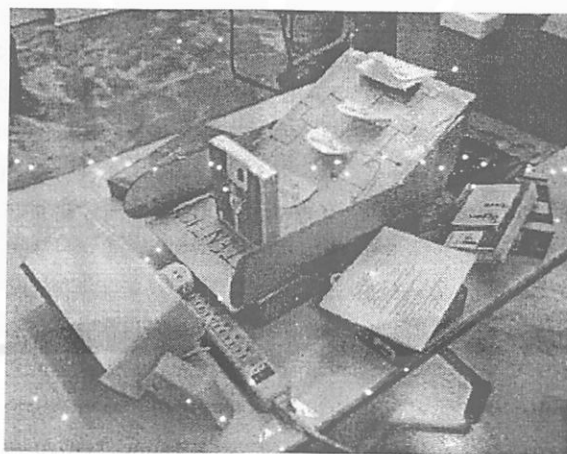


Fig.5: Joint boxes with mechanism.

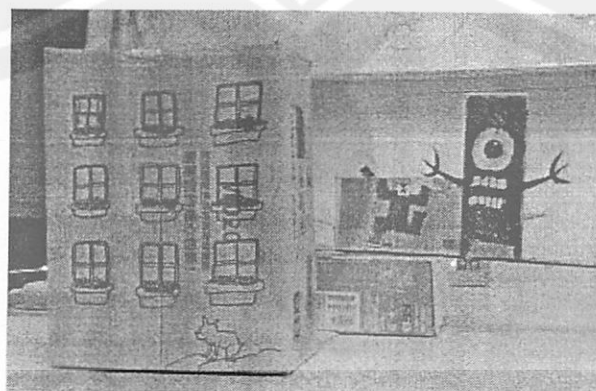


Fig.6: Some of scenario as introduction.

(5) Unit-5. Investigating the phenomenon of resistance and play: Through the observation of the play, the students experience the speed and resistance of movement of objects (as Fig.7). Then, they are asked to summarize the process of the above units into topics for further development. The following topics are summarized and presented by the teams:

- Issue of stealth (cloak) and uncloak (spatial illusions, storage and opening, fun that may or may not be seen in life).
- Application experiments on methods of 3D vision and 3D fabrication.
- Issue of Later Wow (feeling generated by delayed visuals, proposed by Fukasawa Naoto). Experience messages left by a past person, event, or object.
- Enlargement plan (fun and scary) like ALESSI's Alien (reconstructed story scenario).
- Creation of Sci-Fi scenarios (possible forms and functions of thinking environment, spatial environment, characters, transportations, and weapons).

(6) Unit-6. Team members cosplay their imaginary futuristic characters, and develop new products (Fig.8), accordingly.



Fig.7: Experience the speed and resistance of movement.

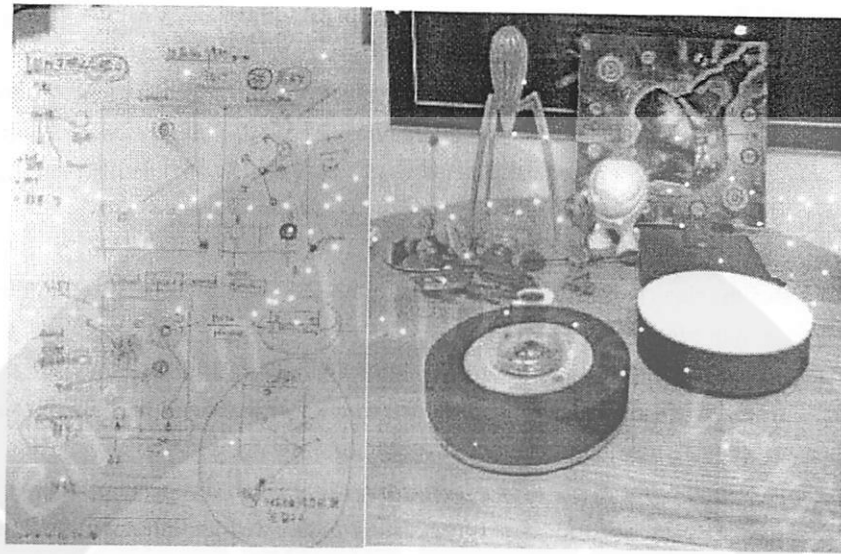


Fig. 8: Drawing, model making and plan to new product

4 Initial Response To Course And Thoughts On Play-Modes

During the course of Play, Sci-Fi & Design, the students first-handedly participated in the toy-operations, interactions, and analyses in the psychological level of play and sci-fi movies...etc. These experiences allow us to understand a simple game was actually hidden with a variety of interactive conditions, and game designs based on interactive psychology. Designing a game may require an seductive story introduction, and a fun, innovative, competitive game play to suck the players into the game world to be rewarded with an extreme satisfaction (reward) or disappointment (punish) to engage the players into retrying the challenge or competition again. Some simple rules may be extremely difficult when applied to the actual game play itself, because games are usually played from the user's angle, and now the psychological emotions triggered in the users while playing have to be speculated. How to precisely grasp the hearts of the users? These are important goals in designs and observations. (By student: Jacky Liu)

In addition, engaging in further thinking on scenario, stimulation, and social activity, the students have provided some initial game concepts, and the summaries are as follow.

4.1 Concept of Game (1):

A game that utilizes user-create monsters as the element of attraction. All users use the same initial monster model to start the game, after dueling other players, the winner can take a weapon, equipment, or physical characteristic from the defeated player. With every item retrieved, the change is reflected in the physical appearance of the player-monster (also changes in attack and defense attributes), and after accomplishing a mission objective in every stage, the actual monster model could be obtained by the player via methods of

physical stores or 3D Printing as a reward for the efforts. (as Fig.9, concept designed by Jacky Liu)

- Scenario: fighting with different monsters
- Stimulant: winning or losing in fights. After each fight, the appearance of the monster changes toward the player's ideal image.
- 3D printing: When the monster reaches an appearance favored by the player, he can obtain it via 3D printing to fulfill the user's desire for collecting.
- Social activity: communicate with different users, collect different monster models; maybe a periodic monster beauty contest will be held. 7

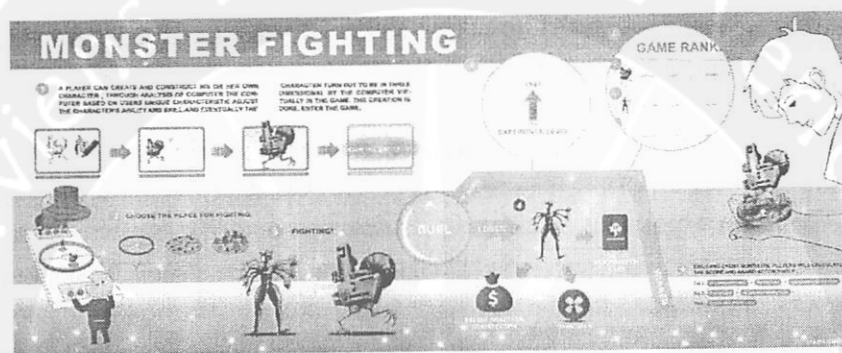


Fig. 9: Scenario for The monster fighting process with award of 3D printing figure.
(Designed by Jacky Liu)

4.2.1 Concept of Game (2):

In correspondence to the alien designed by the gamer, a simple mask is selected to represent the self. Every mask has a slot to insert a mobile phone, and the gyro system inside the phone is used to engage the game (interactive game: the magnitude of head-turning controls the turning of the rotary table inside the game), and some scoring mechanism and game play are defined accordingly. (By student: Ke-Jyun Wu)

- Scenario: alien duel.
- Stimulant: competitiveness, view-turning, and other uncontrollable factors.
- 3D printing: print a medal or some representative reward.
- Social activity: thoughts derived from experience, and they can be shared via internet.

5. Conclusion

The function and performance of the product must also consider the psychological effects. In order for a product to be able to move others, psychological or sensational factors users cared about must be integrated in design to create emotional attractions for affecting users unconsciously. In the practical aspect of designs, idea conceiving is an inspiration that requires active or passive stimulations to arouse the designer's inner mind for generating new

sensations. If the stimulants that incorporate play can be induced systematically during the idea conceiving stage of design, creativity may be better inspired and a more interesting amusement effect may be obtained. It would helpful to arouse student's curiosity of thinking and creativity merged with experience for video game, table game, toy and product through play and competition. Therefore, the choice of the course topic becomes crucial, and lecturers must consider both the current and future design trend to design the course topics. In between every term and school year, the faculty may explore and discuss new course topics for prospective products, such as interactive technology applications, behavior and situation of interactive system design, cross-platform gaming experience sharing...etc, and the resources may be gradually integrated in accordance to the direction of the prospective topics. This study is still proceeding, and the effect of the course will be tracked and examined once the course has been fully implemented.

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ISBSS-4320

Affecting Factors of Health-Related Physical Fitness: Knowledge, Attitude, Self-Efficacy, Exercise Habits, and Weight Status among Middle School Students in Taiwan

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Abstract

This study aimed to explore the possible factors, including knowledge, attitude, self-efficacy, and weight status and how these factors affect Health-Related Physical Fitness, HRPF among middle school students in Taiwan. Results of this study can provide the government a better direction of policy making on improving HRPF and fill the gap of the relationship between HRPF and knowledge, attitude, self-efficacy, exercise habits, and weight status in the literature.

Methods

Data of this study included survey data and fitness test data. In order to ensure participants were representative of the population, participants were selected based on stratified cluster random sampling from 7th to 9th grader in 2014 academic year throughout Taiwan. Taiwan was separated into 4 geographic areas, which include north, center, south, and east, and the number of participants were decided based on the students proportion of each area. A total of 2,493 questionnaires were randomly distributed. Among these, 1,763 valid respondents were collected with 70.72% return rate. Regards to the fitness test data, Taiwanese high school students are mandatory to participate in the fitness test each year under MOE policy.

Results

Among 4 HRPF items, male students performed better than female students only in muscular endurance. Flexibility was the easiest test in both male and female students. In regards to the Body Mass Index (BMI), 23.4% were overweight or obese. Male students (25.7%) possessed higher overweight or obese rate than female students (21%). Regarding to the exercise habits, 25.5 % of male students reached the 333 plan while 9.2% of female students reached that goal. Additionally, knowledge, attitude, and self-efficacy all significantly impacted HRPF positively. But the self-efficacy was excluded in the model. The two-way interaction terms did not show significant effects in both male and female students.

Conclusions

Overall, HPRF among Taiwanese middle school students have been improved since 1999 MOE promoted HRPF improvement plans. However, this study found the obesity problem among Taiwanese middle school students remained and the regular exercise habits was not enough especially among female students. This study suggested fitness-knowledge, attitude and exercise habits acted important factors affecting HRPF among middle school students.

Key words: Health-Related Physical Fitness, middle school students, 333 plan

ISBSS-4342
Producing a Brief Introduction Film for Department on Remote-Islands
University – A Student-Oriented View

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Abstract

In 2013, there were 147 universities in Taiwan. How to beat numerous universities to attract students study? This is very important issue for each university in Taiwan, especially in remote-islands. In the past, the researchers focused on schools promotion, lack explored the theme of the department. The purpose of this study is to produce a student-oriented view brief introduction film for department on remote-islands University. In order to meet the purpose, this study firstly uses Analytical Hierarchy Process (AHP) questionnaire to find out the influence factors' weight on students to choose department on remote-islands University in Taiwan. There were 48 questionnaires send out. Through consistency test, the study got 29 valid questionnaires. The results show that the top five factors were family economic, entrance scores, public/private schools, interests, future development. Then, based on the weight of each influence factors, this study determined the proportion of each factor in the film time. When the movie script outline was completed, the experts were invited to participate in the discussion, and to decide the final script. After completed the brief introduction film, the study invited 40 freshmen of remote-islands University and 30 students

of Middle School to evaluate this film. Students gave a middle-high appraisal. Finally, this study suggests that the brief introduction film can be placed in the department's Web site and made a DVD for students; it can enhance the students' registration rate.

Keywords: brief introduction film, remote-islands, strategy of admissions policy, promotion of department



ISBSS-4345
Investigation on the Features and Using of Elementary Mathematics
Curriculum and Their Impacts on Students' Learning Performance

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Abstract

This study is a three-year project and it aims to explore characteristics of elementary mathematics curriculum in Taiwan, using of mathematics curriculum in teachers' instruction and relationship between curriculum characteristics and using and students' mathematics learning. The first-year research focuses on analysis of written curriculum. By Content Analysis and interview, it compares subjective intention and objective structure of the most common three versions of elementary mathematics curriculum (Kang Hsuan, Nan I, Han Lin) in Taiwan in order to recognize characteristics of elementary mathematics curriculum in Taiwan. By Content Analysis, it treats mathematical questions as units and conducts analysis according to cognitive types, feature types and situations of questions in order to find the characteristics of three versions of mathematics textbook. The result demonstrates that mathematical questions of three versions textbook are mostly procedure without connection ones. Questions of doing mathematics are the least; question feature is mainly based on words. As to question situation, Kang Hsuan and Nan I are based on no situation and Han Lin focuses on situations. Result of this study will serve as inspiration and reference for curriculum editors, teacher educators, on-site teachers and parents.

Keywords: Content analysis, Written curriculum, Elementary school teacher, Mathematics textbooks

ISBSS-4365
The Saint Ludens of Baby

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1. Introduction

Baby often engage in some action such as pull, touch, grab, scratch, clap, bite, lick, chew, swing, wave and focus on something, which is considered meaningless by people, adult, intelligent person and expert, but catch baby's attention. Which let baby constantly repeating? What is answer? Is the purely innocence? What is this pure innocence? Isn't the not for income, the purely mind ludens? What is the innocence, internal, mind, fan, which continuously playing, growing with baby's body and mind? Which spellbound baby? Isn't fun of this fan? Isn't worth to explore of the meaning, sense, intension, esoteric, unique and only?

2. Scientific view of baby

Baby has the ability of sight, hearing, smell, and taste learning from motion since born within few hours. Infant on oral stage depend on the self principle, get happy and satisfied from oral simulation and the immediate gratification. Appearing purposely action to taste and grab something, learning the concept of objective permanence, and imitating motions rely on memories at sensorimotor stage age from six months-two years (Zhu, 2000; Chang, 1996).

3. View of baby action from Huizinga

Baby rendering the noble spirit, as primitive men rendered, only this noble spirit was able to create rich intension, quality and culture. Baby doesn't set any default position while playing. Baby does non-serious treat toward serious games.

Baby does purely treat toward purely games. Biology, analytics and logistics also can't explain the essence of ludens from baby's cried delightedly. It is starting to solve the culture functions which born in baby from biology and psychology which ending enquiry.

4. Baby action compared to sport spirit meaning

Baby's action derived from the pure eager of mental, just for nothing, was able to create noble spirit and rich culture. Such as the ancient sport spirit which for self-breakthrough, peace, respect, justice and fair, enable to create rich spiritual food, literary and culture.

5. Conclusion

Huizinga mentioned that when hand and mind running freely, this ludens (treasure of mind) especially active. Baby, animal, barbarian and wait-see person live in dream, enchant, excite, happy, more original field, outside the seriously of contemporary era. Contemporary era want to realize origin and has baby's wisdom, which need to put on magic coat, change baby's soul and give up adult's wisdom. However, what is baby's wisdom? Is the noble spirit which without any fetter of economic and matter. Simply, internal and curiosity to do. Is the symbol of dream and ideal. Adults, Contemporary era, should inspire shaping of higher culture, if integration into the rich element of spirit, and surmount the pursuit of matter desire when seeking fame and fortune. Inferential to other fields, such as: the fan of literature, history, chemistry, math, medicine, music and art. What motivation drive them writing, exploring, analysis, inference, experiencing, playing and painting daily and nightly? Inferential to the fan of sport? What is the indeed reason which drive person to participate sport in nature attitude — for noth-ing? Wasn't deeply in mind which the soul was caught by something? How-ever, this something would tie up with the authenticity from world believe. Just because this authenticity yielded the content, matter and knowledge which contain more origin, judgement, critical thinking, problem-solving and the authenticity of contemporary era. We live in world every day. This world is an endless field, but using it daily without knowing thoroughly. Therefore, we can achieve this histori-cal human would from interaction and communication between people, and create own world view and life value by holding the richest original intention of spiritual meaning.

ISBSS-4419

**Educational Values of Organic Farming Curriculum: A Case Study of
Elementary and Junior High School of Bliss and Wisdom Education Park
in Taiwan**

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Abstract

The purpose of the study was to investigate the education values of farming curriculum. Qualitative research method was used to conclude the results. The research subjects of in-depth interviews were including executive chief officer, curriculum directors, and farming teachers in elementary and junior high school of Bliss and Wisdom Education Park in Taiwan. Other data was collected from teacher's teaching plans, teacher and student reflective journals. Interview questions include: how the school organic farming programs have worked, what the organic farming curriculum in elementary school meant to them, their views which related with the long-term educational values of organic farming curriculum during elementary school, their teaching examples related with educational values which have been happened in or after organic farming courses, other observations during students farming courses or their farming experiences. The main goal of farming courses of Bliss and Wisdom Elementary and Junior High School was to cultivate noble personalities, and the six concepts of all teaching instructions followed this goal bring out student's inner virtues. The teaching plan was based on four elements and six concepts. The comprehensive long-term educational values and environmental values of farming curriculum contributed into several main themes "learning from experienced teachers", "observation and thinking", "cause and effect concept", "gratitude", "cooperation with others", "responsibility", "perseverance", "giving", "knowledge of nature", "treasure resources", "caring for life", "respecting for nature". If you examine the papers delivered at this topic, you will conclude that references are few focused on these important long-term values for education and environment. We hoped that this research in organic farming education at the school-age, reflecting the broadest consensus possible, maybe identified and used to contribute to policies that could be widely supported.

Keywords: organic farming curriculum, educational value, environmental value, noble personality

1. Introduction

Taiwan society from traditional agricultural era has turned into the era of industry, commerce and technology, but also by the slow-paced rural lifestyle into a fast-paced urban lifestyle during this half century. By the multi-culture impact and the western diet influence, Taiwan young people have tend to rely on the fast food store or supermarket, resulting in the relationship between human and the land gradually alienated. Public knowledge of environmental issues as they relate to the countryside appears to be poor. Young people's knowledge of how their food is produced and how it gets to their plate seems limited. This is a global phenomenon that young students lack of agricultural knowledge and common sense of food source.

In United States, Trexler (2000) investigated elementary school pupils' understandings of crop protection and pesticides. Through in-depth interviews with a small sample of children (n=9), it was found that most of them had little or no understanding of pests and pest protection. In the Netherlands, a lack of knowledge about agriculture was also found in a large-scale survey of 9000 secondary school students (Kuhlemeier et al., 1999). In Israeli, students have limited knowledge and understanding of agriculture, including its economic, environmental and social contributions (Tal, 2008). In the United Kingdom of Britain, a thorough review conducted by the National Foundation for Educational Research and King's College London found that the knowledge of school-aged students from around the world and their understanding of various aspects associated with food and farming appears to be poor (Dillon et al. 2003). Dillon et al. (2003) also found that the research on young people's knowledge and attitudes suggests that there is a strong case for improving teaching and learning about food, farming and land management.

Agricultural education has been a fundamental part of early forms of environmental and nature education. For the relationship of environment and human, agriculture is the main interface, because we are all implicated in this relationship by the fact that we must eat to survive. Organic farmers engage with this interface in a manner that imitates natural processes rather than fights them. Hill and MacRae (1992) stated that ecologically sustainable agriculture (including organic farming) is both a philosophy and a system of farming. It is based on a set of values that reflect an awareness of both ecological and social realities, and on a level of empowerment that is sufficient to generate responsible action.

At the beginning of the 20th century, nature education was a dominant perspective that aimed at developing appreciation of and relationships with nature (Rickinson et al. 2004). As a

researcher and philosopher, Ford said (1986) that outdoor education was recommended as the preferred method for developing appreciation, knowledge and good moral values.

Dewey (1938) explained that, "A primary responsibility of educators is that they not only be aware of the general principle of the shaping of actual experience by environing conditions, but that they also recognize in the concrete what surroundings are conducive to having experiences that lead to growth" (p. 40). Philosopher Dewey is the father of "learning by doing" researchers. The experiential learning theory was proposed by psychologist David Kolb who was influenced by the work of other theorists including John Dewey, Kurt Lewin, and Jean Piaget. According to Kolb (1984), experiential learning is the process of learning through experience for individual, and is more specifically defined as "learning through reflection on doing". One makes discoveries and experiments with knowledge firsthand, instead of hearing or reading about others' experiences. Though, the opportunity for involvement in learning experiences is many, Knobloch (2003) asserted that "one of the greatest challenge for today's teachers and students of agriculture is to move beyond the 'doing' and ensure that all learning is connected to thinking and knowledge that will be easily remembered and applied later in life" (p. 31). Opportunities in a student's field of interest like agriculture can provide valuable experiential learning which contributes significantly to the student's overall understanding of the real-time environment.

What moral values should be taught in agricultural education? Lockaby & Vaughn (1999) determined perceptions of agricultural education teachers nationwide as to what values should be taught to students enrolled in high school agriscience courses in the U.S.. The result was found that agriculture teachers agreed that the 21 values identified in this study were important characteristics which should be taught to young people studying high school agriculture. They perceived the most important values to be responsibility, honesty, courtesy, and cooperation. The least important values they perceive to be taught were friendship, generosity, and freedom (Lockaby & Vaughn, 1999). In general, teachers who perceived they exhibited a certain behavior tended to have a positive perception toward including that value (or a related one) in the agricultural education curriculum.

Although the study reviews show the key solution of agriculture issues is education, therefore, policies which aim at increasing schools' accountability and raising students' achievements can result in a steady decline in the provision of agricultural education programs (Martin, Fritsch, and Ball 2006). In this context, our research intents were (i) to introduce the conceptions and significance of agricultural programs in Bliss and Wisdom Elementary and Junior High School in Taiwan; (ii) to identify long-term educational values of organic farming curriculum implemented by educators in this school. More broadly, our research is

hoped that education values of organic farming at the school-age, reflecting the broadest consensus possible, maybe identified and used to contribute to policies that could be widely supported.

2. Methods

In this study, a qualitative research method that included interviews, school lesson plans, teacher reflective journals and student learning feedback sheets was used to collect information and analysis.

2.1. Interview participant information

Interviews were conducted with 7 staffs of Wisdom Elementary and Junior High School in Taiwan. An outline of interview participant information was listed in table 1. Seven participants including the chief executive officer, the elementary school president, a dean of Student Affairs, and four teachers who have implemented organic farming curriculum, were 3 females and 4 males. Participants had had different degrees of experience with farming. 2 participants have been raised on farms. 4 participants have farming experiences since their childhood and also have organic farming conceptions for over 10 years. Others didn't have farming experiences before they were employed by school. Four teachers were chosen because of the representations of low, middle, and high grades in elementary and one in junior high school. All participants described themselves as vegetarians. The average age of participants was 53 years old and age distribution was from 45 to 62 years old. The average farming teaching year was 8 years. The shortest teaching year was 6 years and the longest teaching year was 30 years. Except holidays and vacations, all participants described that they had lived in school dormitory during the semester.

Table 1: A list of interview participant information

Subject No	Sex	Age	Teaching year	Employed year in current school	position	Elementary Grades of teaching	Interview time
S1	M	62	10	15	CEO		27mins
S2	M	60	30	8	President		35mins
S3	F	60	30	8	Dean	high	46mins
S4	F	49	7	7	Teacher	high	54mins
S5	M	45	10	3	Teacher	low	69mins
S6	M	52	6	6	Teacher	middle	31mins
S7	F	46	16	6	Teacher	Junior high	37mins

2.2. Interviews

The same interviewer conducted all interviews. All participants were provided an illustration of the interview purpose and a statement of stressing confidentiality by interviewer. They also were given the right to withdraw from the study at their discretion, although none withdrew. Interviewer started interview after receiving a verbal acceptance from each respondent by phone. Semi-structured interviews, which lasted approximately 40 min, were all conducted by individual face-to-face interviews in order to help capture both specific and broader views about education value in a given context. Six interviews were conducted by one interviewer with a main leading question and supplemental follow-up questions. All interviews were tape-recorded and transcribed to verbatim text. Notes were also taken during the original interviews and reviewed in detail afterwards by interviewer for evidence of emergent, preliminary themes. Before next question, participants were given a verbal summary of the question and were asked to review immediately by interviewer.

Initial outlined questions included personal details, experience of organic farms, involvement with organic farming classes and current work status. Participants were invited to respond to an open-ended, semi-structured schedule of questions that were related to education or curriculum values, directions and purposes in organic farming. Questions were: (1) how the school organic farming programs have worked; (2) what the organic farming curriculum in elementary school meant to them; (3) their views which related with the long-term educational values of organic farming curriculum during elementary school; (4) their teaching examples related with educational values which have been happened in or after organic farming courses; (5) other observations during students farming courses or their farming experiences. Respondents answered most or all questions which were usually posed in the same order. All were encouraged to contact the researcher to add any supplementary comments afterwards if desired. They were asked for permission by the researcher to make further contacts, and all agreed. Participants were invited to receive copies of any word text transcribing from their interviews and all accepted.

2.3. Other data collection

Elementary school teaching plans, 3 Teacher reflective journals and 4 student learning feedback sheets provided by 3 teachers were collected in the middle of semester, responding to special farming activities in school.

2.4. Analysis procedure

Analysis was conducted using Glaser's (1965) "Constant Comparison" Method (CCM). This method combines the coding of text with inductive theory development which remains close to the data. Before being compared and grouped with similar or related comments from other

participants, participant comments and some data were individually segmented, identified, classified and coded. This process continued until emergent patterns appeared within the data that were subsequently identified as themes and outlined below. Numbers were assigned to seven subjects of interviews from S1 to S7 and coding numbers also were assigned to their related comments. Identification purposes appear with each quotation. Verbatim responses appear in quotation marks.

3. Result

3.1. Elements of organic farming curriculum

According to the definition given by IFOAM (international Federation of Organic Agriculture Movements), Organic farming (OF) is a farming system that uses environmental friendly methods of weed, pest, and disease control. It bans the use of synthetic pesticides and fertilizers, emphasizes animal welfare in animal breeding, takes care of the overall harmony of agro environmental system and of its biological diversity, and gives priority to renewable sources of energy and to recycling of raw materials (Srutek & Urban, 2008). The four principles and practices of OF have been consistently expressed in the basic standards as: (1) the principle of health – that is, OF should sustain and enhance the health of soil, plant, animal, human, and planet as one and indivisible; (2) the principle of ecology – that is, OF should be based on living ecological systems and cycles, work with them, emulate them, and help sustain them; (3) the principle of fairness – that is, OF should build on relationships that ensure fairness with regard to the common environment and life opportunities; (4) the principle of care – that is, OF should be managed in a precautionary and responsible manner to protect the health and well-being of current and future generations and the environment (www.ifoam.org). In this case study, organic farming in Bliss and Wisdom Education Park was small-scale vegetable farming without any chemical fertilizer, pesticide, herbicide and antiseptic. CEO of school inducted 4 elements of organic farming curriculum according to the founder's sayings. The founder of school had said 4 main principles, which are living, production, ecology, and life.

1. Organic soil and water

"How we can turn the barren soil into organic soil is the first lesson of farming curriculum. Healthy and fertilized soil is very important. Soil nutrients must be prolonged in order to become valuable soil. We have to move stones, weeds, and dig puddles or construct water conservancy pipelines facilities."

2. Crop production

"Not only for children to play, but also to really grow crops. Crops can also be a certain amount of production. Although we are not professional organic farmers, I think people can do many things, if there are ways and there is a hope. We need teachers with professional guidance and skills for growing methods, conditions, tools, crop characteristics, and so on."

3. Ecological diversification

“How to cross from production to ecology, we have to improve production and ecological combination, or keep the balance between them. We want to create a full vitality of the ecological environment, for instance digging wetland, planting favorite food for insects or birds. Love, unselfish, and relevant professional intelligence is prerequisites of biodiversity. Non-human-centered concepts should be passed to students”

4. Life humanities

“When we respect for nature, learn from nature, and we will feel the harmonious coexistence of all things. Man and nature, man and man in harmony, the restoration of human nature, it is life. The mind will be raised by organic farming.”

3.2. Linking 6 concepts of organic farming curriculum to noble personalities

6 concepts of organic farming curriculum were linked to noble personalities which were the main purpose of school through matter contents. The table 2 concluded from elementary school teaching plans and teacher experiences shows below.

Table 2: 6 concepts and matter contents of organic farming curriculum

No	concepts	Matter contents
1	cherishing: people, things, materials	Learning from experienced people
		Organic farming classes, events and time
		Kitchen waste recycling
		Making vegetable matter or manure into compost
		Putting cut weeds on mound surface in field
2	practicing physical labor	Making good use of tools
		Picking up rocks, watering, weeding, soil preparation, mounding, fertilizing, harvesting
3	cooperation and mutual assistance	Carrying heavy loads
		Take turns when using tools a wide range of work requires a division of labor
4	caring for the land	Learning watering way to prevent water and soil loss
		Fertilization methods and knowledge of fertilizers and soil, Knowing the relation of soil and human, plants and all creatures.
5	treasuring life	No killing on purpose
		Setting safe and food areas for worms and insects Communicating with all beings in field Sending blessings to all beings in field
6	respecting for nature	Making timely planting and suitable plants for local land
		No over using water Planting trees and setting wetland for animal habitats Peaceful coexistence with nature

3.3. Comprehensive educational values of organic farming curriculum

3.3.1. Learning from experienced teachers

Most participants made reference which the critical key of learning is “Learning from experienced teachers”, not only students, but also teachers should keep learning from experienced persons:

S5-11: Although I was the children of farmers, I also keep learning from experienced people. In fact, there are hundreds kind of crops, and every expert has his/her specialist. For example, some people can plant banana or papaya well, others can't. Our teachers also learn to consult these experts and there are training courses in school. We have a lot of organic agriculture experts and we learn soybean planting with them. Then we can teach students after learning.

S5-13: Learning from experienced people, teachers and students will become more professional. Our organic farmers help us to cultivate, and we go back their farms to help

them. We pick up stones, do weeding, visit their farm, and know how they plant or ask them questions.

S3-08: An appropriate amount of water should be poured into soil for radish. The middle of radish will be black by too much water and will be hollow by too little water. It is not easy. We will ask an experienced farming grandmother to teach students and teachers. Watering time and amount should be just right. Except farming teachers, we will ask a professional farmer to help us to check when we should harvest.

S3-09: After the wheat harvest, we look for an older experienced farmer and ask him to teach us how to shelling. Very few people know now, otherwise, we don't know how to shelling, how to ground into powder.

S4-02: Our teachers learn very hard and want to put what they have learned to teach students. Why do we want to learn from experienced persons? Because the student can't farm a land, we'll be the first to learn. It's teacher's responsibility. There will be no way to transfer those skills, if we can't.

3.3.2. Observation and thinking

Participants asserted that some students' "observation", "thinking", and even "behavioral change" would be happened or practiced through farming. . .

S7-05: In farming process, we interacted with people, nature, and other things. People behaviors, weather, soil, and insects have become the object of our observations. What kind of soil or plants for the season, how to understanding others needs including all being. Observation can be used over everything in our life.

S3-04: Students must observe and thinking when weeding, various weeds have different weeding ways. Stem grasses have to be uprooted. The roots under the surface should be pulled out. After pulling only top of stem grasses, they will grow more and faster.

S6-05: Some children wanted to use their own ways to farm. I often analyzed the problems of their ways. If I told him, he would observe and thinking, finally, he would get to know. Then, he put down his thoughts. Most of the children will listen to the teacher, a few will use their own ideas, but they would listen to the teacher later.

3.3.3. Cause and Effect concept

Most participants responded the important meaning of "cause and effect" concept in organic farming.

S6-10: Through the process of observation and thinking during soybean planting, students know how a soybean seed was planted, and grow up. There are many soybean pods in a mature soybean. The pod. can have many seeds that those grow up as former. Students understand that if they want to do a bad thing, evil seeds will grow the great majority. The behavioral effects after getting a long time also have many influences. Students' thinking can go from here. They will consider seriously before doing or avoid thoughtless doing.

S4-06: Farming courses enable students to experience and learn through observing. For example, Students know what plant you sow and what kind of fruit you'll get. If you look well after plants, plants pay back by growing very large. As like interpersonal relationship, you pass a good will, or you care about them. They also give back you good things. If you do not want to eat meals, you do not take any responsibility in your own, you can't learn many things. It is one simple concept of cause and effect. What you give to it, what it presents to you.

S3-06: Students will learn the relation of cause and effect from experience starting from a small thing, not enough water, vegetables will die, she learned how to watering. Anything can't be too sloppy, like watering just said, you have to work honestly, do things seriously.

3.3.4. Gratitude

Most participants often cited that students commonly had "gratitude to their parents" after knowing the food source and working hard through farming.

S2-01: Children watching the busy parents, no way to appreciate their hard work. When children engaged in farming, better able to appreciate their parents, in the process of doing to get to know the parents of pressure, and would like to share their pressure.

S3-07: "irrigation is slowly watering, like mom and dad feed me slowly. They are hard." Students have written a lot of these things on their reflective journals. One girl said she was careful to take care of baby peas as like mom take care of me. When I grew up, I'll take care of my mom.

S7-03: Students often have works of digging, watering, fertilizing, planting, weeding, picking up rocks and so on, so they understand that the process of a dish meal is hard-won. At a restaurant, when we ask someone to finish the last meals, they are willing to help. They all know it is not easy to get food and can express gratitude to farmers. Lunch dishes and rice are eaten by them as much as possible and no food is wasted here.

3.3.5. Cooperating with people

When asked their views about the values of organic farming curriculum during elementary school. Some of them cited comment of "cooperating" and "helping" is a very important social and interpersonal value cultivated through farming.

S6-01: They are in the process of farming, a very simple example, when watering tool is only one or two, not enough time or take turns using, you have to learn how to cooperate with others. Sometimes teachers guide them to help weak children. Some students don't have physical power to pour water or carry a tool and others help them to do watering.

S5-10: There is mutual cooperation together with peers to finish a whole thing. Teachers often have to transfer this concept to students. Only one person can't finish all things in a class. I asked the children: "in such a big field, you feel that I, a teacher, can get the things done? No, then, who is important? Every one of you.

3.3.6. Responsibility

Some participants made references to “responsibility” which cultivated by finishing difficult physical works in farming curriculum.

S4-04: Because of his hard work of farming experience, he knew that mom and dad have taken care of me very hard, school teacher have taught me very hard, and therefore, he will put more efforts on learning. He will become responsible for himself, and then he will seize the opportunity to learn.

S7-10: The teacher told the students to watering and different groups will come pouring during class time. As a result, teachers found pouring too much water for vegetable shoots. That shows they are responsible. Because students regarded vegetable shoots as their own children, should be responsible to take care of them. They also will take care of younger students during farming classes. Older students will demonstrate how to harvest and do with younger students.

3.3.7. Perseverance

Participants stressed that students’ “perseverance” can be trained through farming.

S2-15: In the winter, when the weather was cold, some teachers were leading the children to watering with bare feet, as like Japanese taught children to take shirt off outdoors in the winter. More training the willpower, stronger it will become.

S4-05: Children’s perseverance can be trained through farming. They can not only grow vegetables, they can keep a nutrient soil to cultivate seeds, and they need to be patient until the growth of seedlings. The perseverance, endurance, and constant effort on plant, is just like a mother’s caring. Seedlings also wants to grow up, they see that the plants never give up growing.

3.3.8. Giving or generosity

Participants indicated that their students can practice giving through setting a safety food area for worms and insects in the field.

S5-03: We set a safety food area for worms and insects in the field. Some people let them ate the whole area without prevention. Sometimes they ate all the leaves in this area. We transplanted cabbages to this area for them. Children grew up in this educational environment. They can practice giving and love since they were young through organic farming.

3.4. Environmental values of organic farming curriculum

Stating independently, environmental sustainable values were made references by most participants, including “Knowledge of nature”, “treasuring resources”, “caring for life”, “respecting for nature”.

3.4.1. Knowledge of nature

S3-12: We combined all grades of farming class and science class to enable students to understand what kinds of the seeds are round, oval and triangular. What shape of the leaves? What types of vegetables seeds, shapes, colors and so on? To teach students how to

distinguish what is good seed. Pineapple is growing on the ground, papaya is growing on trees.

3.4.2. Treasuring resources

S2-11: Several years ago, I took the students to dig a water pond, which is bigger than the classroom, and it took more than three months. Every day after class we took shovels to dig two hours, the depth of that water pond about 1.5 meters, like the size of the swimming pool. One thing was very moved, when the children went watering, they carried water, suddenly one student said to others that did not drop out the water, water was very precious, did not waste. If they got things too easily, he did not cherish. But after that hard working period, they treated water as a treasure.

S7-13: We teach students to do kitchen waste pits. We put the kitchen wastes, weeds or leaves, into pits and covered by soil. After decomposition, earth nutrients are all back to the food. You just have to take better care of the earth and nurture all things. The mother land will give us wonderful things.

3.4.3. Caring for life

S7-06: In the weeding process will face snails or ants. A teacher shared student's experience about snails. Students picked up 4 snails aside in a raining day said that today I had 4 friends together to accompany with my weeding. During our earth-friendly farming process, caring for life, weeding is a very pleasant time.

S7-07: Because organic farming curriculum emphasizes relationship-based, students develop the concept of life-friendly. In the education park, there is often the case with the help of the ant road construction. Ants move, one next to the other, students put branches and stepped on or to avoid the car rolling to them. When it rained or when the season switched, many earthworms crawled out on the road. Students got up early in the morning and try to save them. The earthworms quickly were picked up to a safe ground.

3.4.4. Respecting for nature

S5-01: Sometimes teachers will tell students that they can send blessings to living things. We can communicate with animals and plants, say "please, thank you, I'm sorry, please forgive me". Until the plant growing up, we can tell them that I love you, you have worked hard, thank you for giving us food, and so on.

4. Discussion

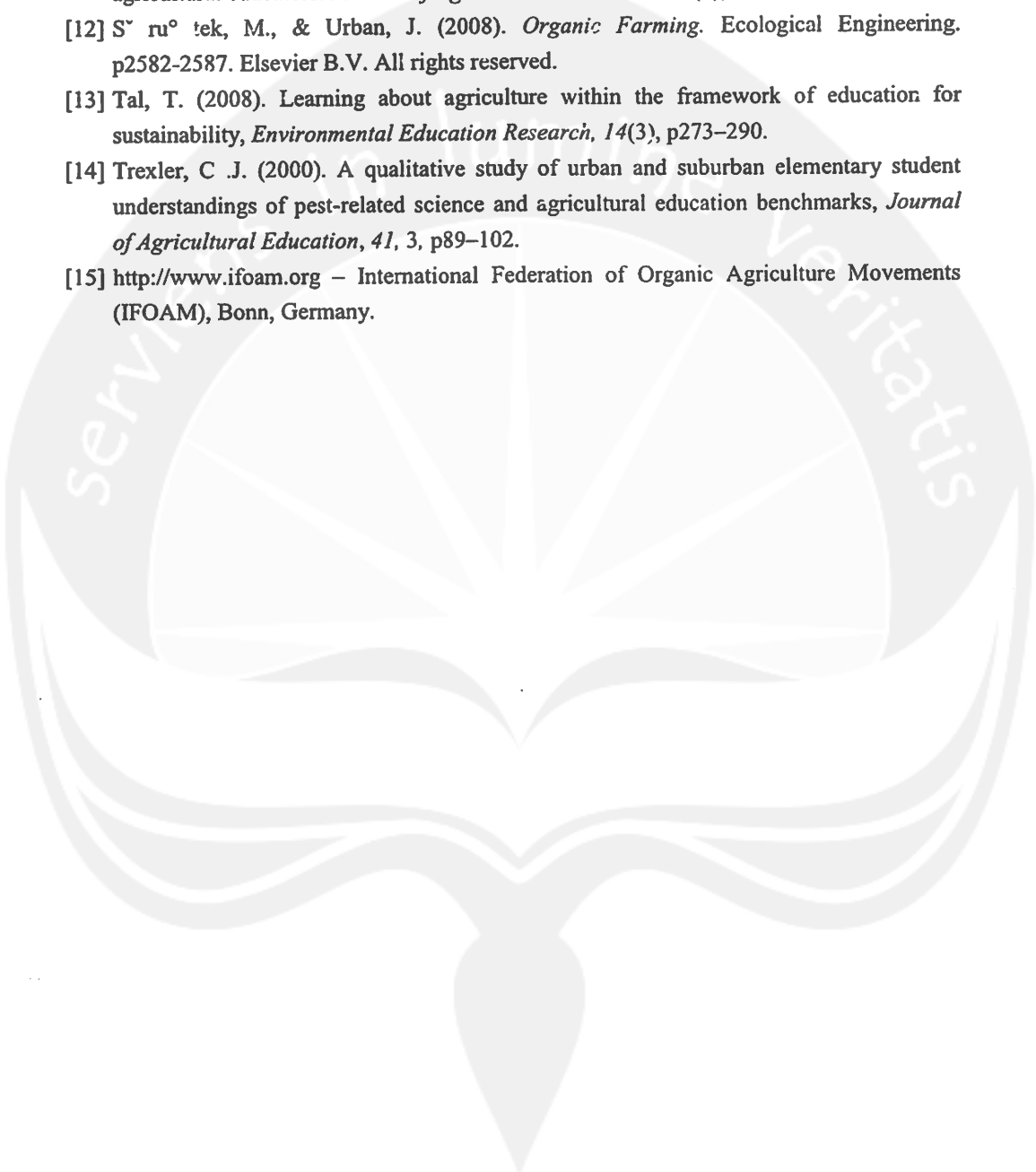
The purpose of this qualitative research was to introduce the conceptions and significance of agricultural programs in school and to determine educational values of organic farming curriculum in Bliss and Wisdom Elementary and Junior High School in Taiwan. As expressed by 7 staffs who were currently involved or have taught organic farming courses. In the interviews and teaching plan documents, CEO represented that the main goal of farming courses of school was to cultivate noble personalities, and the six concepts of all teaching

instructions followed this goal was bring out student's inner virtues. The teaching plan was based on four elements and six concepts. The comprehensive long-term educational values of farming curriculum contributed into several main themes which were "learning from experienced teachers", "observation and thinking", "cause and effect concept", "gratitude", "cooperation with others", "responsibility", , "perseverance", "giving", "knowledge of nature", "treasure resources", "caring for life", "respecting for nature".

The value of this research in organic farming education may be seriously diminished by our inability to establish a programmatic agenda for research. If you examine the papers delivered at this topic, you will conclude that references are few focused on these important long-term values for education and environment. We hoped that this research in organic farming education at the school-age, reflecting the broadest consensus possible, maybe identified and used to contribute to policies that could be widely supported.

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ISBSS-4589

Public Understanding of Emerging Technology—A Example of Genetically Modified Technology

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Abstract

Emerging technologies in the modern society have been controversial. Science and technology and their products bring us richer life or let people violate nature and humanity? For this issue, Genetically Modified Technology (GMT) should be a typical famous issue in this field. Based on the perspective of social images, the study was to explore college students how to face the controversial issue of the GM emerging technology, and analysis of the bio major and non-bio major students' social images of GM technology. By literature review, we define "the cognition of GM technology, the view of GM technology, the response of GM technology, and the judgment of the business behavior of GM technology" as the four categories of social representations. The holistic view of these social representations was characterized as social image. In this study, we adopted the self-designed instrument "The Questionnaire of College Students' Social Images of Genetically Modified Technology" (Cronbach's $\alpha = .78$) to investigate the colleges students' social images of GMT. The research participants were 527 college students sampled conveniently from one university in the East Taiwan. The main findings were: (1) college students do not exclude buy GM products, and evaluated themselves were more rational attitude and behavior than the other peers in the GM products selection and judgment; (2) biological and non-biological major students showed different social images of GMT. For Example, some dimensions of GM awareness, general image, the response and behavior of business judgment reached statistical significance; (3) the confidence of different categories of "information providers" to promote the GM technology products, college students revealed high diversity in trust these information providers. The professional was really worth to believe than politicians. Overall, college students tended to agree with GM technology, and hold high confidence in the medical profession and the science community. Finally, based on the research results, we proposed two suggestions for the genetically modified science and technology education and future research.

1. The first part of the report is a general introduction to the subject of the study. It discusses the importance of the study and the objectives of the research.

2. The second part of the report is a detailed description of the methodology used in the study. It includes information about the sample, the data collection methods, and the statistical analysis.

3. The third part of the report is a discussion of the results of the study. It compares the findings with the previous research and discusses the implications of the study.

4. The fourth part of the report is a conclusion and a list of references. The conclusion summarizes the main findings of the study and the references list the sources used in the research.

5. The fifth part of the report is a list of appendices. These include additional data, tables, and figures that are not included in the main text of the report.

6. The sixth part of the report is a list of footnotes. These provide additional information about the study and the sources used in the research.

7. The seventh part of the report is a list of acknowledgments. These thank the people who helped with the study and provided support during the research process.

8. The eighth part of the report is a list of references. These list the sources used in the research and provide information about the authors and the titles of the works.

9. The ninth part of the report is a list of appendices. These include additional data, tables, and figures that are not included in the main text of the report.

10. The tenth part of the report is a list of footnotes. These provide additional information about the study and the sources used in the research.

ISBSS-4603

Strategy to Gauge the Effectiveness of Methods for Determining Student Reading Levels (RL)

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Abstract

Extensive Reading is an approach to studying a foreign language that should be used in conjunction with other approaches. It emphasizes fast reading of large amounts of text at an understandable level of difficulty by each student. Through such an activity, students obtain fluency in reading in the other language. While building this fluency, students also reinforce their grammar and vocabulary knowledge without the need to focus on such tasks or to memorize independently from context.

However, many second language students do not have a clear idea of the level at which they should be reading. There are several guidelines provided by education researchers, often emphasizing the desirability of reading without referring to a dictionary when encountering new or unfamiliar words. As the number of such words is likely to be high when reading a typical book written by or for native/near-native speakers, reading 'graded readers' is a popular approach to reducing the likelihood of encountering too many of the words. In Extensive Reading philosophy it is recommended that readers should not be unfamiliar with more than 4 or 5 words per page. When they do encounter such words, they should ignore or skip them. In the Hokusei Junior College Extensive Reading course, students are advised to check the words only if they appear repeatedly and appear to be crucial to understanding the story being told.

These graded readers are available in a variety of 'levels' where the vocabulary and language structure (i.e. grammar) have been carefully decided and arranged. These 'levels' are assigned by the publishers of the books and one further difficulty for students is that one publisher's level 'one' may actually be more or less challenging than that of another publisher.

Hokusei Junior College's course utilizes a module designed for the Moodle LMS (learning management system) called 'Moodle Reader' that allows students to take quizzes about the graded readers they have read. This system has a large degree of flexibility and, depending on the settings chosen by the instructor, students may choose from a very large selection of quizzes for books at various levels.

One of the challenges that arises is how students can choose books at a level appropriate for them. Following that, how do they distinguish between the different and differing 'levels'

assigned by publishers to books in their series. There is often a large difference between a book assigned 'level 1' by one publisher and that offered by another publisher. This research intends to propose an approach using the standardized level definitions developed by the Extensive Reading Foundation (ERF) and included in the Moodle Reader module for classifying different graded readers, and to compare methods of 'assigning' levels to students using a type of placement test and TOEIC reading scores.

Keywords: extensive reading, moodle reader, graded readers, reading level

1. Introduction

The utility of extensive reading in language teaching has been addressed in innumerable studies and its purported benefits acknowledged by inclusion in Hokusei Junior College's (hereafter Hokusei) curriculum. When it was decided that the author would be in charge of this course for second (final) year students of the two-year junior college, the goal at the outset was to offer as much flexibility to learners as possible, yet still remain within the confines of a valid form of evaluation. The two can seem almost incompatible at times. The flexibility desired entails giving students the freedom to choose books that they wish to read from Hokusei's extensive library collection of graded readers. This means there could be no standard tests for evaluation, as all would have been exposed to markedly different texts.

Nonetheless, some form of evaluation is required. Having learners write a book report after each book they finish is one approach, but requires considerable time that could otherwise be devoted to reading more books. The system adopted for this course involves using the Moodle Reader module, which is a free add-on the free LMS (learning management system) Moodle.

Each quiz is timed (usually 15 minutes) and questions are chosen randomly from a bank of options. As a result little time is necessary to produce proof that the student has read the book in question with enough understanding to pass the quiz. The time saved can then be applied to further reading.

2. Justifications

Day and Bamford [1] (1998, p.7) present their definition of extensive reading by way of a list of characteristics to which teachers may easily relate. The list may be summarized as: quantity, variety, freedom, interest, rewarding/minimal follow-up, accessible/understandable, silent/individual, faster speed, teacher-guided, and the teacher as role model (Day & Bamford, 1998). Although the concept of minimalizing follow-up is laudable, in practice it is difficult to satisfy institutional requirements without some type of formal evaluation. Using the Moodle reader module enables the instructor to perform evaluation without unduly burdening

students with work, such as writing, that may be better assigned and assessed in courses other than extensive reading.

With minimal assessment intervention, it may be possible to approach Day and Bamford's aim of getting "students reading in the second language and liking it...(while also achieving)...increased general second language competence" (Day & Bamford, 1998, p. 6).

3. Challenges

In extensive reading, students are expected to read lots of text (books) ideally slightly below their actual level of reading ability. One of the main challenges comes in identifying this 'level of reading ability'. Theoretically the students themselves would have the best knowledge of what is easily understandable for them and at which level they can read with confidence and also for meaning.

However it is not always so easy for students to know this, especially if in their second language education experience they have tended to be exposed to more intensive reading. They may require guidance in selecting material of appropriate difficulty. Many instructors are likely to use a 'hit and miss' approach where students try reading books at levels that seem appropriate to them, eventually settling on the best, or what seems to be the best, for them.

Furthermore, even after the best level has been identified, there may be no clear criteria for what that 'best level' is beyond the level assigned to the book by its publisher. If the students continue to read books from that same publisher at the level they found to be best for them, then there might be no need to consider the matter further. However, if the goal of the Extensive Reading course is to offer the students high degrees of freedom in choosing texts that interest them, then there is a strong likelihood that they will wish to choose titles published by different companies. At this point, the fact that publishers have not adopted a standardized approach to assigning or even naming levels of their books will soon become apparent. What may be labelled as 'level 1' by one publisher may be of equivalent difficulty to what another labels as 'level 5' or even with a non-numerical classification, such as 'beginner', etc. To overcome this, the Moodle reader approach assigns a reading level (RL) to texts which is independent of publishers' names for the levels of their books (Robb) [3].

When using the Moodle reader module, Pennington [2] (2011) used TOEIC scores to assign students to an initial RL. As Hokusei students take TOEIC at least twice during their two-year period of study this is one option. However, the online placement test administered by the Extensive Reading Foundation (ERF Placement Test) appears to offer an option that is both strongly compatible with the Moodle Reader system, and free of charge. Hokusei intends to conduct further study into comparing these and other approaches to determining the RL that is best for students when they begin the Extensive Reading course.

4. Conclusions

The benefits of extensive reading have been acknowledged by those behind Hokusei's Extensive Reading course and it is hoped that it will not only help contribute to making reading in a second language (English) easier for students, but also to make it enjoyable and to contribute to improving overall second language ability with accompanying better results on standardized tests of English as a second language.

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An Investigation of the Imagination Rubric with Delphi Technique

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Abstract

The purpose of this study is to utilize Delphi technique in obtaining the consensus of the priorities of the imagination rubric scale for higher education. In the first stage, group representatives were selected and a draft was generated through focus groups. The Delphi technique was then employed to explore the subjects, opinions and build consensus. Feedbacks from participants were analyzed and summarized. Therefore, researchers draw up the core concept of imagination by literature review in this research. Second, generalize the imagination by document analysis and interview. Finally, two rounds of Delphi questionnaires were administered to ten experts. According to the certain criteria, researchers arranged the priorities of these curriculum contents that the experts suggested, into five levels: "very important, important, moderately important, little importance, unimportant". After analysis and arrangement, there were 13 items and four categories as follows: 1. Novelty, 2. Elaboration and Synthesis, 3. Application of professional knowledge, and 4. Beyond Reality. Finally, implications of the findings were discussed and suggestions for future research were provided.

Keywords: imagination, rubric, Delphi, higher education



ISBSS-4593
The Training Program of Leisure Instructor in Taiwan

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Abstract

The demand of the professional leisure instructors has increased rapidly for the two-days off policy implemented since 2001 in Taiwan to allow people to arrange more leisure activities, the personal income raised to make it affordable, and the awareness of exercise to keep healthy. As people pursue a high quality and more diverse leisure activities, it promotes the prosperous development of sport, fitness and leisure industry. Therefore, the cultivation of those professional instructors is very important. However, the professional training and planning systems are still not well-established in the field of sport and leisure management in Taiwan. The students graduated from recreation-related departments couldn't meet the company's requirement yet. Hence, the purpose of this research aims to analyze the current training program of sport and leisure-related departments in Taiwan by literature review and documentary analysis to know the core competence for those professional leisure instructors should have in order to solve the problems of the gap between school and industry.

Keyword: leisure instructor, training program, professional competence

ISBSS-4483
Social Value for Sport Participation in Chinese Society

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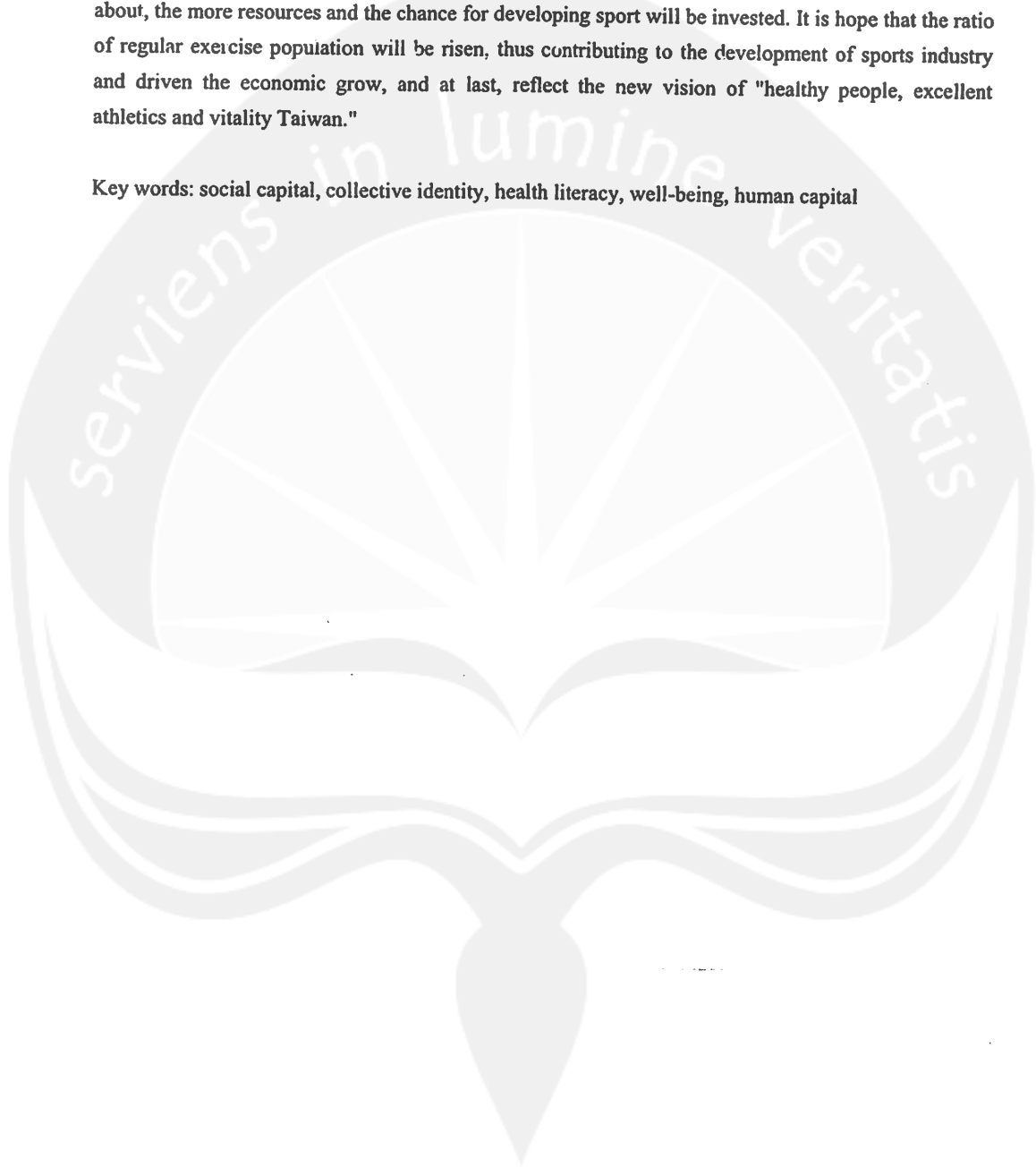
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Abstract

Sports and physical education are not only beneficial for individual health and happiness, but also positively help the nation and society create social capital, cultivate human capital and foster the establishment of collective identity. Lee, Cornwell, and Babiak (2012) had established a "sports complex social value scale (CMSVS)" to test the social value of sport participation in Western Country. However, Chinese culture is very different from the western country. In addition, the way and the type people participating in sport are quite different. Therefore, it is very crucial to understand the sport participation and its social value in Chinese Society. However, there is no measurement or scale to use in investigating the social value for sport participation in Chinese Society. This study aimed to establish an integrated scale for Chinese community to measure the social value of sport participation by revised the scale "CMSVS" which was developed by Lee et al. (2012). The scale contained five constructs, which are social capital, collective identity, health literacy, well-being and human capital. Each constructs has 3 items. 7-point Likert Scale was used in the survey instrument. Factor analysis was used and the number of 435 subjects from Taiwan, Hong Kong, Macau, China and Singapore were selected in this study. After excluding invalid questionnaires, the total sample was 426 (254 males and 172 females). Through SPSS for Windows 22.0 and Amos 8.0, confirmatory factor analysis indicated that the CMSVS in Chinese version has stable factor structure and great reliability. A .92 of Cronbach's was reported for the total scale, .85 to .89 for the five constructs, showed high internal consistency of the survey instrument. In addition, results of the confirmatory factor analysis indicated that the good fit of the model was demonstrated. The result implied that the CMSVS scale could also be applied to the Chinese Society after the translation and adjustment by this study. It is suggested that future research use this scale to compare the differences of the social value

generated from sport participation in different Chinese communities. This study not only established a measurement to the future study in the method perspective, but also theoretically provided a new point of view for Chinese societies. Furthermore, this study can be the basis of further cross-national research in the future. The more social value created through sport people and government know about, the more resources and the chance for developing sport will be invested. It is hope that the ratio of regular exercise population will be risen, thus contributing to the development of sports industry and driven the economic grow, and at last, reflect the new vision of "healthy people, excellent athletics and vitality Taiwan."

Key words: social capital, collective identity, health literacy, well-being, human capital



ISBSS-4528

**The Study of Authoritarian Leadership, Leader Trust, and Team
Commitment of Boxing Coach in Taiwan**

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Authoritarian leadership, even though is criticized and undesirable in Western societies because of its unquestioned power inequality, it is still prevalent in Chinese combat sports team. The purpose of the study was to examine the relations among boxing coaches' authoritarian leadership, leader trust, and team commitment in Taiwan. The participants were 198 athletics (male: 156, female: 42) of junior and senior high school in 2014 presidents cup boxing tournament in Taiwan. Students completed authoritarian leadership of coaches, leader trust, and team commitment questionnaires. Multiple regression were adopted to analyze the data. The result of analysis showed (1) Amenable leadership and disciplinarian leadership positively predicted leader trust, but prescriptive leadership did not predict leader trust; (2) Prescriptive leadership and disciplinarian leadership positively predicted affective commitment, but amenable leadership did not predict affective commitment; (3) Leader trust positively predicted affective commitment; (4) Leader trust were partly mediated between disciplinarian leadership and affective commitment; (5) Leader trust played a full mediating role between amenable leadership and affective commitment. Therefore, different orientations of authoritarian leadership to leader trust, and affective commitment has effect of distinguish.

Keywords: leadership behavior, social exchange theory, sport team

Poster Sessions—July 22

Poster Session 7

Management 3

B1, Renaissance Sapporo Hotel
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BREFM-22290

Value Creating in Medical Institutions under Public-Private Partnership: Comparative Case Study

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BREFM-22291

The Correlation between Relationship Quality and Behavioral Intentions Exhibited by Various Cosmetology Groups- A Study on the Medical Cosmetology and Salon Cosmetology Practitioners in Taiwan

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BREFM-22290

**Value Creating in Medical Institutions under Public-Private Partnership:
Comparative Case Study**

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Abstract

Under the Neo-liberalism movement and economic policies that advocate privatization, the public-private partnership (PPP) mode not only relieves the financial burdens from the local administration, but also provides citizens with easily-accessible facilities for medical care. This system quickly became the revolutionary model favored by the central and local administrations for the management of public hospitals. Thereafter, the subject of inter-organizational governance and the models of value creation in the PPP projects became the focus in practice and in the academic sector. However, most of the studies conducted in the past have focused on the general industries; there is still a gap in the theoretical studies for the medical care industry.

Through methods such as literature review, focus group seminars and in-depth case interviews, this study aims to delineate a few important concepts in value-creation under PPP in the medical institutions. Key questions asked were: (1) Under the PPP, what kinds of differences exist in management and practical operation between groups with different interest goals or contract types? What kind of theoretical and practical implications exist behind such differences? (2) How does PPP influences value-creating, in terms of types and degrees of inter-dependency between organizations, during implementation of activities or mission statements? (3) What is the meaning behind value-creating PPP in different contract modes? Researches value creation for academic and medical management practices. This study expects to serve as a reference or basis for systems designed for the sector of public administration for strategic practice in the field of hospital management.

Keyword: public-private partnership, Value Creating, inter-organizational governance

Introduction

Medical services in Taiwan went into a period of expedited transformation into commercialized, market-oriented, and treatment-based models after the 1980's [1]. At this point, public hospitals started to feel the pressure of market competition and poor administrative performances was repeatedly criticized [2]. The criticism became more obvious and intensive after the government began to outsource public hospital management to private companies [3]. Since then, introducing a market mechanism to reform the public hospitals in Taiwan became the major strategy for solving the problems in administration and cost-effectiveness. Among which, the public-private partnership mode, whereas the government built the hospitals and outsources the management to private companies, not only solves the financial problems of the regional governments, but also enhances the quality and accessibility of medical services to the public. This mode became the standard model to the central and regional governments for reform of the public and private hospitals [4].

The concept of public-private partnership implies an administrative model of collaboration between the government and the private sector, which is the so-called a transformation from "government to governance" [5]; it is a form of continuous interaction between "the government and society." Different from the traditional bureaucratic administration that stressed authority, order, and control, the concept of administration in public-private partnership represents an administrative model that promotes integration of resources, professional guidance, diverse cooperation and coordinated network of public and private sectors [6]. Specifically, it is stressed in this study that a public-private partnership is an effective way to reach the goal of the outsourcing public hospital development policy and helpful to the implementation of government policies and planning. Since it involves partnership between the government (public sector) and the medical industries (private sector), it is a typical administrative issue of inter-organizational relationships from the aspect of theoretical study.

This special field of study in partnerships between public and private sectors has begun to gain attention in the recent years among the scholars in the management field, and a substantial number of dissertations have been published in the top journals of management, such as Kivleniece and Quelin [7]; Rufin and Rivera-Santos [8] and other scholars. Among them, Rufin and Rivera-Santos [8] discussed the subject of public-private partnership under the frame of equality, contract, scope, non-security interests and trust. Kivleniece and Quelin [7] pointed out that, from the aspect of value creation and value capture in the alliance of the public and private sectors, the public sector's concern lies in the interest of the public and the private sector's concern focuses on the individual values or benefits; therefore, through appropriate public-private partnerships, mutual benefits for both the public and private sectors can be met. Furthermore, Monge et al., [9] viewed the public-private partnership as a kind of "common good"; therefore, how to design a mechanism with sufficient incentives for

the development of the medical industry and enhancement of the overall social benefits will become a significant issue in the public-private partnerships.

This study aims to explore the inter-organizational administration mechanism involved in the private-public partnership for hospital management and the value (medical services) created from such alliance from the views of Rufin and Rivera-Santos [8] and Kivleniece and Quelin [7]. The rationale behind the issues discussed in this study is that medical (hospital) or academic (colleges) institutions commissioned by the government as entities in the public-private partnerships to provide medical services to the public will jointly create the values (products and services). In short, this study makes an attempt to explain several important concepts in value creation targeting on the medical institutions through literature review. These concepts include: (I) the models of outsourcing public hospital administration in Taiwan, and (II) public-private partnership and its theoretical basis. They are briefly stated in the following section:

1. The Models of Outsourcing Public Hospital Administration

Since the late 1970's, Taiwan experienced radical development of corporate invested and large private hospitals, as well as a wave of hospital reform. These new entities introduced corporate administration and management into the industry and exerted serious pressure to the rigid public hospital administration system [10]. In order to solve the problems in public hospital administration, namely limited human resources, budget, accounting, purchasing regulations, public administration systems and the legislative bodies, under the new concept of liberation and the policy of economic privatization, the government began to commission administration of public hospitals to private capitals or corporations [11, 12]. Through privatization, the government was seeking a way to relieve its financial burdens and solve the problem of poor performances in public hospital administration [2].

Currently, the most commonly adopted model for outsourcing the administration of public hospitals in Taiwan is "built by the government and run by private companies"; that is, the government owns the rights to the property and the commissioned private institution owns the rights to administration, as well as the responsibility for profits or losses [2]. The owner of the properties commissions the operations of the hospitals to private institution in the form of a contract; therefore, the relationship is based on the laws [13]. The role of the government was switch to "steering" from "rowing". Through privatization and outsourcing, the new form of partnership consolidated the strength from the private sectors to share and even replace the "authority", formerly exclusive to the bureaucratic system, in public affairs [14] and seek for the best balance between supervision and coordination.

Under the current laws and administrative system, the operation of outsourcing public hospital administration can be implemented through contracts based on the following laws and regulations: (1) Act for Promotion of Private Participation in Infrastructure Projects, (2) Government Procurement Act and (3) Self-government Ordinance of Property

Administration and Management Commission Regulations enacted by the respective city/county government. The policy is targeted to gradually improve the effectiveness of resource utilization under the public-private partnerships model and enhance the performance of the outsourced public hospitals. This not only solves the problem of inconsistent administration standards among regional public hospitals, but also provides quality medical/public health services and epidemic control [3] to the public. At present, several public hospitals have been outsourced based on the Self-government Ordinance of Property Administration and Management Commission Regulations, including the Wan Fang Hospital and Taipei Municipal Guandu Hospital. The Shuang-Ho and Tainan Municipal An-Nan Hospital adopted the BOT (Build-Operate-Transfer) model based on the Act for Promotion of Private Participation in Infrastructure Projects, which defines the concept as, the private institution invests in the building and operation of the infrastructure project, and upon expiration of the operation period, transfers the ownership to such infrastructure project to the government.

2. Public-private partnership and its' theoretical foundation

This study emphasizes that "outsourced public hospital administration" is a typical inter-organization public-private partnership. In the past, studies on public-private partnership were mostly started from the perspective of public policy, and in the recent years, several economists or management scholars began to explore this issue from different perspectives.

Both the public and private sector play an important role in the development of the outsourced public hospital administration system. The governance role played by the government has certain effect to the success of public-private partnership formation and in turn influences the policies on the medical industry and economic development. Nowadays, the role of the government has changed from authoritative governing to governance ("less government" and "more governance") [7]. Pierre and Peters [15] divided governance into three models, upward transfer global governance, downward transfer cross-regional governance, and outward transfer partnership governance based on the theory of transfer of power in a state. Pierre and Peters[6]also defined a multi-layer governance system, which entails "a nonhierarchical exchange system of negotiation at the international, national, regional and local levels". This governance system allows everyone from the international society to a nation, a local government, and even a group to interact through negotiation. Multi-level governance is not only a result of partnership, but also a mechanism of enhancing partnership. It is a trend of state governance, which turns policy planning and implementation into collaboration.

Public-private partnership is a long-term cooperative relationship between the public and private operators [17], and they reach a consensus to provide public services, including health care services and administration [18], as well as sharing risks, costs and profits. The relationship is built on the concept of shared add-values [19]. Martha et al., [20] proposed a

set of assessment indicators for collaborative operations, covering the dimensions of communication, commitment, equality, techniques, skills, trusts and respects. These factors play a part to influence the quality and the external forms of collaborative operation. Ruñín and Rivera-Santos [8] discussed the framework of equality, contract, scope, non-collateral equities and trust from the concept of public-private partnership and explored the governance mechanism of alliances. Sullivan and Skelcher [21] derived the different types of partnerships from the perspective of organization and developed a spectrum that ranges partnership from the special relationships of informal networks to the highly formal interaction and provide as an effective tool to help the collaborative organizations effectively integrate into a single organization, consolidating the network, partnership, and alliances.

The partnership between the public and private sectors emphasizes the interaction and trust between the participants. Therefore, partnership is an integration of various organizations and sectors, aiming to improve services and share benefits through new skills, resources, ways of doing things, and reform. It enables and provides resources to the private sector or non-profit organizations for enhancement and innovation of products and services. The most important of all is to improve the quality of services through the expanded capacities and authorities of partnership [22]. Koka and Prescott [23] pointed out that social interaction among organizations is not only an embedded social network to a certain degree, but also an inter-organizational governance mechanism built on the basis of mutual trust. In addition, in the process of government policymaking, the interaction between the government and the public, the public and private sectors, and the between governments are significant research subjects, and public-private partnership is also a new form of governance model derived from the interactive decisions. The reason why scholars of public policy see public-private partnership as the new governance model is that it emphasizes that the goal of governance lies managing all types of value creation.

Conclusion

“Outsourced public hospital” is a combination of government and medical institutions (schools or other organizations), which creates mutual benefits and value through “special resources”, “incentive mechanisms”, “connection ties that enable consolidation”, “interactive experience” and “value distribution or capture mechanisms” under an appropriate governance structure. Together they form a value creation platform. The most important mission of such partnership is to construct and provide an experience environment, which enables bilateral dialogues and establishes a collaboration model to achieve the goal of “do your best, and gain what you are worth”. Thus, the required medical service-oriented value activities can be implemented to achieve creation of medical values [24]. More specifically, a public-private partnership clearly defines the “double-creation activities” and, with the support of the

abovementioned mechanisms, it enables joint value assessment and creation. This is a subject worth further exploration through empirical studies from different perspectives.

The concept of public-private partnership can no longer be viewed from the simple structure of top-down logic in public policy theories. The concept now has evolved into a complex system, which covers the issues of how to distribute created values. The subject can no longer be analyzed from the perspective of policy alone, because it involves divergence in price negotiation capability generated from the different contribution and investment by the involved parties during the value co-creation process [25]. Other than the government, each of the roles involved in value creation for a medical institution has equal or even greater importance; from which, we know that we must extend the development, scope, and focus of the theories into the common activities of the government, medical care provider, and consumers on a basis of public policy theory and include the economic and management theories into the framework based on the industrial reality. From which, we will be able to develop and explore the theoretical basis of this special inter-organizational relationship. This will be a feasible subject for further study in the future.

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**The Correlation between Relationship Quality and Behavioral Intentions
Exhibited by Various Cosmetology Groups- A Study on the Medical
Cosmetology and Salon Cosmetology Practitioners in Taiwan**

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Abstract

Background Medical cosmetology market induced certain changes to the consumer market and consequently consumption pattern in the market traditionally dominated by salon cosmetology. This phenomenon indirectly influenced consumer behaviors and compressed the business opportunities for the traditional salon cosmetology practitioners. **Methods** This research was conducted over a period of two months from January to February 2013 through computer-assisted telephone interviews. Sampling was targeted on the population in Taiwan 20 years and older and people who have not yet had any cosmetology experiences are excluded. A total of 774 valid samples were derived. **Results** The satisfaction rate of medical cosmetology is higher than the satisfaction rate of salon cosmetology, and the satisfaction rate of service quality and facilities reached the level of statistical significance ($P < 0.05$). However, satisfaction rate for "value" did not reach a level of significant difference ($P > 0.05$). "attitude" and "trust" are the major positive influences to customer behavioral intentions ($P < 0.05$). **Conclusion** This research recommends the cosmetology industry to provide differentiated services and products, with a goal to achieve a general enhancement in customer relationship quality and satisfaction rate. The result will be positive influence on customer loyalty and the willingness to pay more for the cosmetology products or services. This will be a good opportunity to create a win-win situation for the customers and the cosmetology industry.

Keyword: medical cosmetology, salon cosmetology

Introduction

In the thriving cosmetology market, intense competition drives the cosmetology practitioners to take relationship quality and behavioral intention seriously. Cosmetology is a link in the

service industry; therefore, establishing good relationship quality with customers is an effectively way to enhance customer loyalty and the effect of word-of-mouth advertising and a critical factor in the success of the business. In summary, this study aims to discuss the concept of relationship quality and its influence to behavioral intention. (1) To discuss the relationship between relationship qualities (attitude, trust and commitment) and behavioral intention, targeting on the different categories of cosmetology practitioners. (2) To compare the customer satisfaction rates in the different cosmetology practices.

This research was conducted over a period of two months from January to February 2013 through computer-assisted telephone interviews. Sampling was targeted on the population in Taiwan 20 years and older and people who have not yet had any cosmetology experiences are excluded. Data collection was targeted on the information relating to customer satisfaction, relationship quality, and behavioral intention.

The 774 subjects tested in this study were entered into a factor analysis to establish the construct validity of the scale. The KMO value (Kaiser Meyer-Olkin value) is 0.841 and Bartlett test of sphericity p value < 0.001 . This shows the sampling is adequate and factor analysis may be carried out. The scale was verified with principle components analysis and question selection is set with the following criteria: eigenvalue > 1.0 and factor loading > 0.5 . Four factors were extracted through orthogonal rotation of the varimax rotation method, which were named: attitude (accumulated explained variance is 69.060, Cronbach's α 0.850), trust (accumulated explained variance 70.377%, Cronbach's α 0.789), commitment (accumulated explained variance 76.349%, Cronbach's α 0.844), and behavioral intention (accumulated explained variance 74.373%, Cronbach's α 0.645), as shown in Table 3.

Table 1 socio-demographic analysis shows that the distribution of salon cosmetology and medical cosmetology samples is similar to that of the national census data. The population distribution of northern, central, southern and eastern Taiwan are 44.5%, 22%, 27.8% and 5.7% respectively, and the corresponding national census distribution of each area is 44.9%, 22.6%, 27.6% and 4.9% respectively. [16] In the variable of "gender", females take up the highest percentage at 82.3%. In "age", subjects under 30 take up the highest ratio at 39.8%, followed by 31 to 40 at 36.7% and 41 and older at 23.5%. The majority of the valid samples fall in the education category of college and above at 67.6% and the largest "occupation" group is "commerce" at 58.5%. In "income", the majority falls into the category of NT\$30,000 and less at 52.2%, followed by 30,000-50,000 (41.7%), and 70.7% of the subjects spend less than NT\$5,000 on cosmetology products. Between the salon cosmetology and medical cosmetology groups, significant differences ($p < 0.05$) were reached in the variables of age, monthly income, and monthly spending on cosmetology services. Customers choosing medical cosmetology tend to have higher monthly income and spend more on cosmetology services.

Table 2 shows the results of the satisfaction survey targeting on the customers of salon cosmetology and medical cosmetology services. This study uses the t-test to test the satisfaction rate in three criteria. Overall, the satisfaction rate of medical cosmetology is higher than the satisfaction rate of salon cosmetology, and the satisfaction rate of service quality and facilities reached the level of statistical significance ($\rho < 0.05$). However, satisfaction rate for "value" did not reach a level of significant difference ($\rho > 0.05$), which indicates that customers have a higher satisfaction rate for medical cosmetology.

Table 4 shows the correlation between relationship quality (attitude, trust, and commitment) and behavioral intention between customers of salon cosmetology and medical cosmetology under the regression analysis model. Targeting the colinearity problem possibly occurred during regression analysis on the independent and dependent variables, this study has conducted tests of variance inflation factors (VIF value < 10) and condition indicators (CI value < 10) on the associated variables in advance to prevent the colinearity problem from interfering with the coefficient derived from the regression analysis model. In Model 1, the variance derived from interpretation of behavioral intention by "attitude" is 13.5%, F value is 61.506, and goodness-of-fit of the regression model reaches the level of significance ($\rho < 0.001$). Results of the t-test shows that there is no significant difference in the individual independent variables of the salon cosmetology group (β value = .940, $\rho > 0.05$), except the variable "attitude" (β value = .368, $\rho < 0.001$), which reaches statistical significance. This result shows that better attitude brings higher behavioral intentions.

Model 2 sets "attitude" and "trust" as the variables and the variance of interpretation on behavioral intention is 14%, F value 43.032, and goodness-of-fit of the regression model reaches the level of significance ($\rho < 0.001$). The result of t-test shows that there is no significant difference in the individual independent variables of the salon cosmetology group (β value = 1.049, $\rho > 0.05$), except "attitude" (β value = .293, $\rho < 0.001$) and "trust" (β value = .107, $\rho < 0.01$), which reached the level of statistical significance. This result shows that better attitude brings higher behavioral intentions. Model 3 sets the attitude, trust and commitment as the variables, The variance of interpretation on behavioral intentions is 14%, F value 32.524, and goodness-of-fit of the regression model reaches the level of significance ($\rho < 0.001$). Results of the t-test indicate that there no significant difference in the independent variables, except "attitude" (β value = .269, $\rho < 0.001$) and "trust" (β value = .090, $\rho < 0.05$), which reached the level of statistical significance. However, the variables of "salon cosmetology" (β value = 1.049, $\rho > 0.05$) and commitment (β value = 0.051, $\rho > 0.05$) did not reach the level of significance. Overall, "attitude" and "trust" are the major positive influences to customer behavioral intentions ($\rho < 0.05$).

Customers are the source of profit and a significant asset to a business. Customer satisfaction is a measurement on the value of the products or services based on customers' past experiences and an overall evaluation to their experiences (Joewono and Kubota, 2007).

From the perspective of market, there are an increasing number of medical cosmetology centers, salon cosmetology shops, and skincare brands launched into the market and demand is growing. From the aspect of industrial manpower structure, the increase in the number of medical practitioners and biotechnologists, as well as the increasing opportunities for education in the field of cosmetology, shows that many people with different disciplines have shown high interest in the cosmetology industry. Therefore, we can expect that the cosmetology industry will become a star industry in the future. From the empirical results of this study, we found that customers of medical cosmetology generally have higher satisfaction rate in the quality and facilities than customers of the traditional salon cosmetology, which is consistent with the study of Chu et al, (2011).

However, no statistical significance has been found in the satisfaction rate towards the “value”, which contradicts the result found by Babin et al, (1994) in their studies. This may have been a result that the customers tend to evaluate the value from their financial capabilities and therefore no significant differences have been found in the factors of experience, practicality, and enjoyment.

The Importance of Attitude, Trust, and Commitment of Relationship Quality to Behavioral Intention

Attitude and trust are generally regarded as essential factors to successful relationships (Dwyer et al, 1987; Morgan and Hunt, 1994) and they are also important factors of relationship quality. When uncertainty and risk levels are high, developing customer trust becomes even more important (Crosby et al, 1990). When customers have positive behavioral intentions, they tend to give positive recommendations about the cosmetology centers, maintain loyalty, increase spending, and are more willing to pay higher prices for products and services. Relatively, the relationships between the customers and cosmetology centers are enhanced. From the empirical results derived in this study, we found that “attitude” and “trust” (relationship quality) positively influence behavioral intention. This result is consistent with the results found in the relevant researches (Zeithaml et al, 1996; Morgan and Hunt, 1994; Huang et al, 2010; Lien and Kao, 2005; Garbarino and Johnson, 1999). In other words, higher customer trust toward the cosmetology industry will help the businesses maintain good relationships with customers, and the chances for customers to choose to products and services will also be higher.

Commitment is an important variable in the trading relationships and successful long-term partnerships (Anderson and Narus, 1990; Dwyer et al, 1987; Moorman et al, 1992), and also an important factor of successful long-term relationships (Ganesan et al, 2010). However, no significant difference has been found between commitment and behavioral intention, which contradicts the findings in the researches discussed in the previous sections. One of the possible reasons would be that cosmetology products are highly diversified, so it is rather difficult to persuade customers and induce behavioral chance with commitment and

guarantee on the efficacy. Therefore, no significant correlation has been found. Finally, targeting the cosmetology customers, this research recommends the cosmetology industry to provide differentiated services and products, with a goal to achieve a general enhancement in customer relationship quality and satisfaction rate. The result will be positive influence on customer loyalty and the willingness to pay more for the cosmetology products or services. This will be a good opportunity to create a win-win situation for the customers and the cosmetology industry.

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Table1 Descriptive statistics

Country	Total number		Salon cosmetology		Medical cosmetology		χ^2	p value
	n	%	n	%	n	%		
Gender								
Female	637	82.3	304	39.3	333	43.0	0.26(2)	.877
Male	137	17.7	82	10.6	55	7.1		
Age (years)								
< 30	308	39.8	152	19.6	156	20.2	8.08(2)	.018*
31-40	284	36.7	145	18.7	139	18.0		
> 41	182	23.5	89	11.5	93	12.0		
Education								
Junior high school and under	49	6.3	24	3.1	25	3.2	4.35(4)	.360
High school	202	26.1	118	15.2	84	10.9		
College and above	523	67.6	244	31.5	279	36.0		
Occupation								
Military, Civil and Teaching Staff	66	8.5	37	4.8	29	3.7	0.28(3)	.964
Agricultural	85	11.0	37	4.8	48	6.2		
Business	453	58.5	224	28.9	229	29.6		
Student	52	6.7	23	3.0	29	3.7		
Other	118	15.3	65	8.4	53	6.8		
Live location								
Northern	345	44.5	173	22.3	172	22.2	9.42(2)	.009**
Central	171	22.0	86	11.1	85	11.0		
Southern	215	27.8	105	13.6	110	14.2		
Eastern	43	5.7	22	2.8	21	2.8		
Monthly income(NT\$)								
< 30,000	404	52.2	221	28.6	183	23.6	9.90(2)	.007**
30,000-50,000	323	41.7	148	19.1	175	22.6		
> 50,000	47	6.1	17	2.2	30	3.9		
Monthly spending on cosmetology services(NT\$)								
< 5,000	547	70.7	291	37.6	256	33.1	9.90(2)	.007**
5,000-10,000	161	20.8	63	8.1	98	12.7		
> 10,000	66	8.5	32	4.1	34	4.4		

Note: **p<.01 , *p<.05

Table2 Satisfaction survey targeting on the customers of salon cosmetology and medical cosmetology services

Country	Salon cosmetology		Medical cosmetology		<i>t</i>	<i>p</i> -value
	Mean	SD	Mean	SD		
Service quality	3.37	.750	3.51	.808	2.449	.015*
Facilities reached	3.50	.797	3.60	.742	1.816	.070
Value	3.44	.757	3.59	.771	2.726	.007**

Note: ** $p < .01$, * $p < .05$

Table3 Factor analysis

Factors	Country	Factor loading	Eigenvalue	AEV (%)	Cronbach's α
Attitude	institutional perception	.858	2.762	69.060	.850
	Service level	.854			
	Service attitude	.812			
	Service evaluation	.798			
Trust	Privacy maintenance	.870	2.111	70.377	.789
	Professional standard	.855			
	Trust relationship	.790			
Commitment	Quality assurance	.908	2.290	76.349	.844
	Sufficient communication	.889			
	understand needs	.823			
Behavioral intention	Repeat purchase	.860	1.487	74.373	.645
	Purchase by	.862			
	recommendation				

Note: AEV (Accumulated explained variance)

Table4 Regression analysis

Measure	Model 1		Model 2		Model 3	
	Beta	t	Beta	t	Beta	t
Cosmetology						
Medical cosmetology						
(Reference group)						
Salon cosmetology	.032	.940	.035	1.049	.033	.980
Attitude	.368	10.968**	.293	6.323**	.269	5.146**
Trust			.107	2.321**	.090	1.819*
Commitment					.051	1.000
Model explanation force change						
R ²	.138		.144		.145	
Adj. R ²	.135		.140		.140	
F	61.506		43.032		32.524	
P	.000**		.000**		.000**	

Note: **p<.01 , *p<.05

Poster Session 8

Education 2 / Busienss 1 /

MIS-Management Information System

B1, Renaissance Sapporo Hotel
2015/07/22 Wednesday 11:00-12:00

ISBSS-4407

The Meaning of Activities of Annual Cyclic Rite in Child Education Institutions to Health of Child

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Heejong Yeon | *BK21 Plus Eco-Edu System Research Team, Department of Early Childhood Education, Pusan National University*

ISBSS-4455

How Do Pre-Service Teachers for Young Children Perceive Diversity, Particularly, Homosexuality in Korea?

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ISBSS-4465

Images of Warm Educational Community in Korean Pre-Service Early Childhood Teachers: Analysis of Adjectives

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ISBSS-4577

Hermeneutic Conversation on Ethics of Love in Early Childhood Education: Focusing on Levinas's Thoughts

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ISBSS-4459

Parent's Recognition of Parents Participation as Volunteers in Kindergarten Classrooms

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ISBSS-4380

Psychosocially Matured Aging: Beyond the Successful Aging

Jeong-Shin An | *Pusan National University*

Ycung-Sook Chong | *Pusan National University*

Su- Gyun Seo | *Pusan National University*

BREFM-22345

The Outcomes Analysis of Using High-Frequency Oscillatory

Shu-Chen Hsing | *Chi-Mei Medical Center*

Yu-Cheng Chen | *Chia-Nan University of Pharmacy and Science*

Tsair-Wei Chien | *Chi-Mei Medical Center*

Kuo-chen Cheng | *Chi-Mei Medical Center*

BREFM-22414

Mitigating IS Employees' Strain : The Roles of Online Social Support and Coping Strategies

Chao-Min Chiu | *National Sun Yat-sen University*

BREFM-22428

Meta-Analysis for Industrial Security Research Trends

Onechul Na | *Chung-Ang University*

Soyoung Sung | *Chung-Ang University*

Hyojik Lee | *Chung-Ang University*

Hangbae Chang | *Chung-Ang University*

BREFM-22449

Research and Application of Fast Image Decomposition Algorithm Base on Morphological Component Analysis and SSIM

Chih Ming, Kung | *Shih Chien University Kaohsiung Campus*

ISBSS-4407

**The Meaning of Activities of Annual Cyclic Rite in Child Education
Institutions to Health of Child**

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In this study I am going to examine the meaning of activities of annual cyclic rite in child education institutions to health of child. Annual cyclic rite is the cultural events that have been performed periodically and repeatedly in each season as a traditional culture of Korean and it has the wisdom that keeps our health as changes of nature. In recent days, as growing of people's interests into healthy life, annual cyclic rite is being highlighted again. It seems that the way of enjoying annual cyclic rite would contribute to keeping the health of child.

With sampling of 56 of five-year old children who are from S public kindergarten located in Y-city, I investigated how their experience to annual cyclic rite were connected to their healthy lives.

S public kindergarten performed the activities of annual cyclic rite in every month from Mar. 2013 to Feb. 2014 and all events especially have been performed with minimum one week of preparatory period. As materials for the study, I referred to the interview data with teachers during planning, performing and evaluating process of activities of annual cyclic rite, teachers' journal, child observation logs and other related documents.

The study result falls into three categories, e.g. physical, mental and social health of children. First, physical health; traditional foods and games in the activities of annual cyclic rite helped children for better understanding to healthy foods and activated their voluntary physical actions.

Second, mental health; the positive emotions that children feel through the activities of annual cyclic rite are connected to happiness in everyday life and became emotionally stable.

Third, social health; As the activities of annual cyclic rite were performed with family, the age of them and neighborhood, the children experienced a healthy close bond in community and were able to learn about wisdom to live together with others.

ISBSS-4455

**How Do Pre-Service Teachers for Young Children Perceive Diversity,
Particularly, Homosexuality in Korea?**

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Introduction

As Korea has experienced a rapid increase of democratic diversity, multicultural education came to be considered one of the important educational issues. However, the discourse of multicultural education still remains around the education for immigrants. Multicultural education accepts diversity related to ethnicity, race, gender, disability, social class, and homosexuality. Scholars of multicultural education based on critical approaches attempt to support minority groups and challenge oppressive social relationships. Homosexuality is oppressed, isolated and still hidden issues in Korea.

The goal of this study

In this study, we tried to investigate how pre-service teachers for young children perceive diversity issues, particularly, homosexuality in Korea.

Research methodology

To investigate subjective understanding of pre-service teachers for young children about homosexuality, we applied Q-method. 180 pre-service teachers were Q-sample. Using open questionnaire, we asked participants to describe how they think about homosexuality.

Research result

After the process of Q-sorting, we found out that pre-service teachers belong to the four distinguished types: Respect, Acknowledgment, No Acknowledgment and No relation.

Conclusions and Implications

As results show, how 40% of pre-service teachers for young children perceive homosexuality as something unrelated to their lives, or something that is difficult to acknowledge. It would be necessary to investigate the reason why teachers perceive homosexuality negatively in the future research.



ISBSS-4465

Images of Warm Educational Community in Korean Pre-Service Early Childhood Teachers: Analysis of Adjectives

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In Korean early childhood education, parents and teachers have relatively made concerted efforts to provide good education for children, and there was consequently little concern about early childhood education institutions as educational communities. In recent years, however, the necessity of systemized research on a warm educational community is increasingly stressed in the wake of several child abuse cases by day care teachers. An analysis of the images of pre-service early childhood teachers about an educational community will make it possible to convert early childhood education institutions into warm educational communities. The purpose of this study was, therefore, to examine the images of 242 Korean selected pre-service early childhood teachers about a warm educational community. A survey was conducted with questionnaire that consisted of 41 groups of contrastive adjectives that were selected by this researchers. The collected data were analyzed, it's found that the respondents viewed the image of a warm educational community as communicative, followed by valuable, amiable, considerate, non-conflicting, life-oriented, positive, harmonious and fair. The smallest image of it as systematic, followed by meritocratic, realistic, professional, suitable for Korean sentiment, process-oriented, mental and progressive. Their images of a warm community varied with the type of the educational institutions (college & university) that they worked for. Given the findings of the study, some suggestions were made about how to nurture teachers and how to conduct teacher education.

Key words: pre-service early childhood teacher, educational community, image

ISBSS-4577

**Hermeneutic Conversation on Ethics of Love in Early Childhood
Education: Focusing on Levinas's Thoughts**

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Recently, cases of physical abuse against children in preschools have been among the most prominent social issues in South Korea. The purpose of this research is to examine various opinions on preschool teachers' current situations and effective solutions in dealing with a case of an attack on children in an early childhood education center. In particular, this research will explore the possibility of teaching by means of love in a preschool classroom, based on Levinas's philosophical thought emphasizing Epiphany of the Face of the Other, as an alternative solution to the current situation.

The researcher collected qualitative data from hermeneutic conversations in a focus group. The focus group includes three educators of preschool teachers, who have professional experience as preschool teachers and directors, and have Ph.D. in early children education. The group conducted a seminar relating to this research topic. In order to find answers to questions of "how" and "why," the focus group shared their views in response to public opinions (e.g., media reports and interview of related persons). In the seminar, they attempted a group conversation reflecting on modern philosophers' thoughts, including Levinas' Face of the Other. As a process, the participants repeated their conversation after analyzing data with prism vision. There were three dialogues, which lasted a total of three hours.

Here are three research outcomes. First, the current crisis of preschool teachers in child education centers stems from the occurrence of distortion of care, the suspicion or risk of dismantling caring communities, and preschool teachers' loss of pride in "caring" for children. The participants interpreted this phenomenon as a result of the situation in which

the distressed expressions on the faces of parents and teachers are not read by each other, but instead are denied or rejected. Second, they suggested mandatory installation of CCTV, strengthening safety education, consolidating credentials of preschool teachers, and increasing personality education. However, they emphasized that these strategies cannot provide fundamental solutions without sensitivity to the Other's suffering. Finally, they suggested reflection on monosemy, reasoning through tactile experience, and women's relation-centered thought.



ISBSS-4459

**Parent's Recognition of Parents Participation as Volunteers in
Kindergarten Classrooms**

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The importance of parent-teacher collaboration and its positive impact on children is well documented. The significance of this relationship between the parents and teachers of kindergarten children is even more crucial and has been propounded over a number of years. Teachers in kindergartens are presumed to be responsible for lack of parent-teacher collaboration, and offer programs related to parents and families including children. In the case of Korea, the relationship of teachers and parents is continuously discussed by the reason the connection of them helps children development. The kindergartens offer diverse level of relationship when parents take part in the activities that intended to make network with teachers; from parent education that expressed that parents are objects for education to parent /family involvement that includes meaning that parents stand equality with teachers. Parent participation as volunteers system in kindergartens is one of the form that offers to parents. This system suggests that parents engage in themselves to know about children's life in kindergartens.

This study attempts to reveal how the parents recognize on the volunteer activities of kindergartener's parents in the kindergarten, and have specific meanings through their experience that they worked as volunteers. The participants were 8 parents, and 2 teachers of two kindergartens which are located in city P.

The major results of the study are as follows;

First, the parents have some chances to understand kindergarten's life, and know the system of kindergarten by joining as volunteers who worked with teachers. Parents understanding help them make relationship between parents and teachers with truly having equal partnership with teachers. Second, the parents can make connection to other parents who work together. Parents who participate in volunteers system come to kindergarten in setting a place and time for their activities. These regular activities make parents take an interest in each other, and these interests tend to change conversation about their private lives.

Trying to think a role of parent participation with considering the child-rearing environment in this modern society, the necessity is being proposed that teachers will recognize parents as the existence of proceeding with promoting young children's better development and as the existence of proceeding with sharing even a joy and solving even a worry together while



Exposition Universelle, 1889, Paris, France. The building was designed by Joseph Emile Vassier and was the first building to be constructed entirely of steel. It was the first building to be constructed entirely of steel. It was the first building to be constructed entirely of steel.



raising children together. Considering that parents are in a situation of needing to begin the first child care in the state of having no experience of facing a child before especially in modern society, the institutions like kindergarten and child care center, which are being in charge of child care, are thought to be likely needed even a role of leading in the future so that parents can proceed with being grown into true parents.



ISBSS-4380

Psychosocially Matured Aging: Beyond the Successful Aging

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Abstract

This study tried to identify limitations of successful aging concept which developed in Western culture to describe positive aspects of well-aging to adopt in Asian culture and suggest substitute explanation about well-aging of Asian elderly. There were diverse different components and influential factors of successful aging between Asian elderly and Western elderly such as independence, close relationships with family members, psychological well-being, etc. Therefore, we developed psychosocially matured aging concept based on the Confucianism which is important value in Asian culture as an alternative concept of successful aging for Asian elderly. First, we conceptualized psychosocially matured aging model based on interviews from 12 Korean elderly who was recommended as well aged by diverse elderly experts and tested three dimensions model of matured aging with 719 Korean elderly: as developing oneself in physically and mentally, having good relationship with family members, and realizing social responsibility with generativity. Second, we examined the relationships among psychosocially matured aging, components of successful aging, psychological well-being, ego-integrity, wisdom, and transcendence from several empirical studies. These results from diverse studies showed positive relations of psychological matured aging with positive aging and components of successful aging. Last, we examined the adoptability of the psychosocially matured aging concept to Asian elderly in Western culture and found that this concept is useful to Asian elderly. Based on these results, effectiveness of psychosocially matured aging concept to access well-aging of Asian elderly was discussed.

Keyword: successful aging, psychosocially matured aging, cultural differences

1. Introduction

Successful aging concept was developed to access positive aging for compensate negative perspectives about aging in Western culture. When this concept was introduced in academic area, many researchers used to measure well-aging and proved the usefulness of this concept. However, there were limits to use this successful aging concept to apply to Korean elderly. Rowe and Kahn(1998) emphasized physical, cognitive, and social function and Baltes and Baltes(1990) did selective optimization with compensation as a successful aging. These successful aging or happy aging in western culture was emphasizing the pursuit of success and happiness of the individual level. However, Asian elderly regards well aging that all of the elderly as well as other generation happily. Therefore, substitute concept for successful aging needs to reflect cultural backgrounds and different characteristic of diverse elderly.

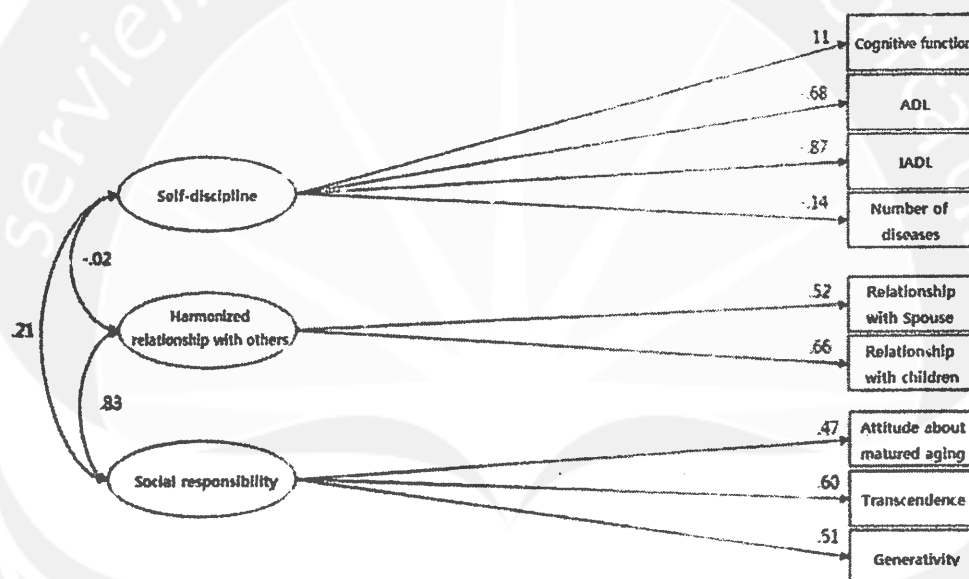
Through examination based on through 79 researches in last 20 years in western and Korean studies about successful aging, we found that successful aging was accessed with various different components and there was mixed using of components and influential factors of successful aging in diverse empirical studies (An, Chong, Jeong, Seo, & Cooney, 2011). In addition, the rate of successful agers based on different measures from conceptualization problem was found. Based on the results, we consider necessity of re-conceptualization of well-aging in Asian culture.

2. Psychologically matured aging

2-1. Conceptualization of psychosocially matured aging: Confucianism and interviews from happy Korean elderly

We tried to find well-aging framework from oriental Confucian idea and western psychology, Vaillant's healthy aging with matured coping skill and Snarey's generativity study from Erikson. Based on Confucianism, self-discipline, harmony with other people, and doing social responsibility are main characteristics of ideal human. This perspective focused on the social integrative happiness emphasizing coexistence in the society (Cho, 2006). In addition, Vaillant(2003) suggested matured coping skill as an important component of healthy aging. Therefore, we focused on matured aging concept. Snarey(1993) classified generativity as three different level; individual, parental, and societal and these classifications are very similar with Confucianism's idea about well-aging. Therefore, we define matured aging as adjustment one's body and mind to maintain good physical and cognitive function, maintaining good relationship with others, feeling generativity by recognizing the social responsibility and seeking transcendence or meaning of life. We examined these constructs with in-depth interview with 12 happy Korean elderly about well-aging and matured aging to check validity with questions about self-concept, life, understanding of aging and matured vs immatured aging, attitudes about death and loss, interpersonal relationships, gratitude etc. The results showed that happy and matured aged elderly regards these constructs as important

components of well-aging(Seo, 2011). To access these constructs with measurable concepts, we developed selected items asking high physical and cognitive functions, absence of diseases, relations with spouse and children, generativity, attitudes about matured aging, transcendence etc. with 719 Korean elderly (An, Jeong, Chong, Seo, Cooney, 2012). Through exploratory and confirmatory factor analysis, we developed three-dimensional model as below. In addition, we selected good items providing fluent information through item response theory. Through these researches, we developed conceptual model and question items for matured aging and found that self-discipline dimension is not fitted with other dimensions. Therefore we decided that we need to focus only psychosocial dimensions and psychosocially matured aging.



< Figure 1 > Model of psychosocially matured aging (N=719)

2-2. relationships between psychosocially matured aging and components of positive aging

After developed psychosocially matured aging model, we examined the relationships between psychosocially matured aging and components of positive aging what was studied in previous research such as successful aging, psychosocial well-being, ego-integrity, wisdom, and transcendence in several different studies. First, we examined the relationship with matured aging attitudes with components of successful aging such as physical and cognitive health, social activity, and psychological well-being(An, Chong, Seo, 2013). The result showed that elderly showing high matured aging attitudes reported negative relations with

ADL and number of disease, and positive relations with cognitive function, social activity, and psychological well-being (Table 1).

Table 1: Correlation coefficients among ADL, IADL, number of disease, cognitive function, PGCMS, and matured aging attitudes

	ADL	IADL	Number if disease	Cognitive function	Social activity	Psychological well-being	Matured aging attitudes
ADL	1						
IADL	.57***	1					
Number of disease	.12**	.08*	1				
Cognitive function	-.10*	-.06	-.08*	1			
Social activity	-.29***	-.15***	-.07	.10**	1		
Psychological well-being	-.10**	-.04	-.27***	.19***	.19***	1	
Matured aging attitudes	-.12**	-.06	-.09*	.11**	.13**	.09*	1

* $p < .05$, ** $p < .01$, *** $p < .001$

Then we split our sample as high 33% and low 33% to identify the characteristics of highly matured aged elderly and compare their means of successful aging components. Table 2 showed that highly matured aged elderly reported lower physical health and higher social activity and psychological well-being.

Table 2: Differences of mean between high matured aged group and low matured aged group

	Classification	N	Mean	SD	<i>t</i>
ADL	High group	183	7.24	.843	-3.11**
	Low group	243	7.68	1.97	
IADL	High group	185	10.86	2.05	-2.10*
	Low group	240	11.35	2.72	
Number of disease	High group	184	2.17	1.56	-2.18*
	Low group	243	2.53	1.92	
Cognitive	High group	183	28.26	2.12	1.59

function	Low group	243	27.91	2.43	
Social activity	High group	177	21.47	5.54	2.73**
	Low group	239	19.96	5.62	
Psychological well-being	High group	178	30.96	6.47	2.07*
	Low group	238	29.69	5.97	

* $p < .05$, ** $p < .01$, *** $p < .001$

Next, we examined the relationships between psychologically developments with matured aging attitudes. The results showed strong positive relations among ego-integrity, transcendence, wisdom, and matured aging attitudes. Table 3 showed that ego-integrity and transcendence have influences on matured aging attitudes.

Table 3: Relations among the matured aging attitudes, ego-integrity, transcendence, and wisdom.

	Matured aging attitudes	
	B (β)	B (β)
Age	.09(.11)*	.01(.01)
Education	-.31(-.07)	.06(.01)
Subjective health status	.62(.11)	.18(.03)
Subjective financial status	.41(.08)	.16(.03)
Ego-integrity		.08(.08)*
Transcendence		1.09(.71)***
Wisdom		.03(.07)
R^2	.03	.61
ΔR^2		.58
F	2.63*	69.55***

* $p < .05$, ** $p < .01$, *** $p < .001$

Based on the results, we conclude that psychologically matured aging conceptualization of Korean very well.

2-3. Cultural comparison of psychosocially matured aging concept

Next, we examined cultural differences of psychosocial maturity experiences between collectivism and individualism cultures (An, Jeong, Chong, Moon 2015). Personal, relational,

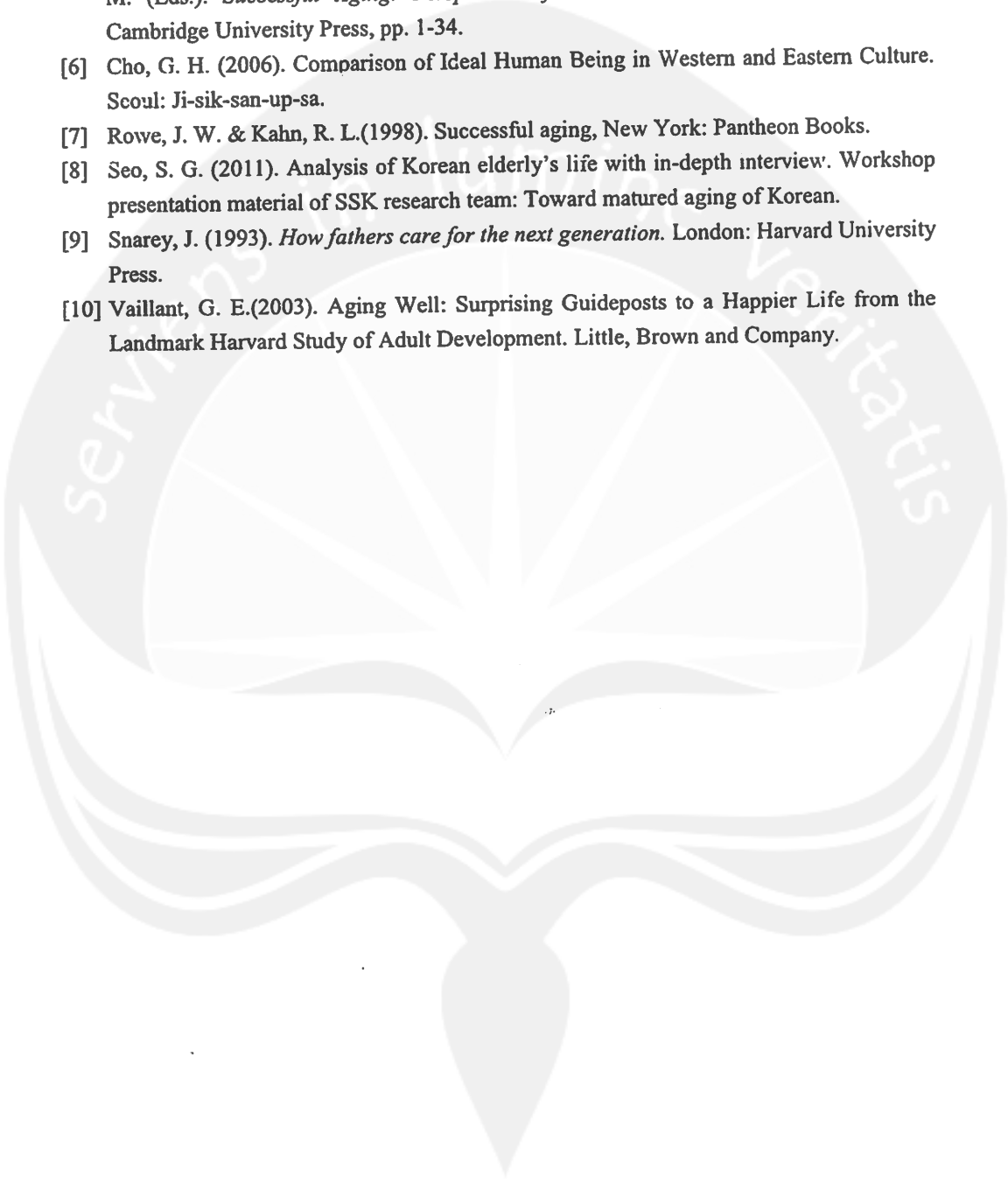
and social dimensions were accessed to explore psychosocial maturity experiences to Korean elderly and Korean elderly resident Canada who psychosocially well developed by deep interview and contents analysis. The results showed diverse similarities and differences of psychosocial maturity among elderly in two cultures. First, psychosocially matured elderly in both cultures showed positive self-concepts and self-satisfactions. However, the meanings of them were differed. Second, in terms of interpersonal relations, currently the most important and satisfied relation is spousal relationship to the elderly in both cultures and relationships with children looks satisfied one. However, the meanings of relationships were differed by cultures and gender. Third, psychosocial matured elderly in both cultures reported psychosocial factors as matured aging in social dimension. However, Korean elderly regarded matured aging as relational oriented one, but Canada resident Korean elderly reported social attitudes about matured aging in. In addition, elderly in both cultures reported greed and harm to the others as immatured aging. Korean elderly regarded relational discord as immatured aging, but Canada resident Korean elderly answered it as demanding adult treatment from the next generations. In terms of transcendence, adjustment was answered as living like going with the flow. However, Korean elderly reported adjustment based on fatalism, but Canada resident Korean elderly's answers showed religious meaning about God. Last, psychosocially matured elderly showed positive view, acceptance and integration of their life.

2.4 Acknowledgements

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BREFM-22345
The Outcomes Analysis of Using High-Frequency Oscillatory

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Abstract

Purpose

High frequency oscillatory ventilator (HFOV) reduces lung injury from conventional ventilation and improves oxygenation in patients with acute respiratory distress syndrome (ARDS). The purpose of this study is to investigate factors influencing the effectiveness of HFOV in adult patients.

Method

We performed a retrospective study on adult patients, who was treated with HFOV during January 2006 to December 2010, hospitalized in ICU of a medical center in southern Taiwan. The information of gender, age, diagnosis, ICU admission type, APACH II, days of ICU stay, ventilator days were collected. Additionally, the survival of patients, parameters of respiratory system between conventional mechanical ventilation and HFOV were compared using SPSS 17.0 for windows (An IBM Company). In the first part, we used descriptive statistics to analyze background information of patients. Continuously, we used chi-square and the Nonparametric Wilcoxon rank sum test to compare the differences of factors between survivors and non-survivors. The respiratory gas exchange and the parameters of respiratory system before and after using HFOV were analyzed by the nonparametric Wilcoxon signed rank test. The risk factors for mortality were calculated by multiple logistic regression analysis.

Result

The data of study were collected from 77 patients. The improvement ($P < 0.05$) of FiO_2 , P/F ratio, pH, and PaCO_2 in ARDS patients was observed significantly within 72 hours after treating with HFOV. The mean airway pressure (mPaw) was increased significantly, respectively. The significant differences was showed in patients ≥ 60 years (35% vs. 64.9%, $P < 0.05$), HFOV hours (129.8 ± 79.7 vs. 99.6 ± 128.1 , $P < 0.05$), mean arterial pressure (91.7 ± 20 vs. 80.1 ± 19.3 mm Hg, $P < 0.05$) between survivors and non-survivors. Furthermore, the pH level of non-survivors after treating with HFOV was significantly lower than survivors (7.34 ± 0.09 vs. 7.28 ± 0.12 , $P < 0.05$). however, There is no significant difference in mPaw, oxygen concentration (FiO_2), PaCO_2 , and Oxygenation index between the two groups.

Conclusion

HFOV improved gas exchange and increased the P/F ratio and pH level in adult patients. Furthermore, levels of FiO_2 and PaCO_2 were decreased in ARDS patients, respectively. The efficiency of HFOV peaked at 24 hours and remained constant through 72 hours. Patients with better pulmonary gas exchange before HFOV treated had better prognosis, indicating that early HFOV treated was associated with better outcomes.

BREFM-22414

Mitigating IS Employees' Strain : The Roles of Online Social Support and Coping Strategies

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Abstract

The rapid change of Information and Communication Technology (ICT) may be a stressor to cause many information systems (IS) employees or professionals to suffer from technostress. Technostress has a negative impact on IS employees' mental health. Organizational behavior literature focuses on the use of workplace social support to mitigate employees' psychological strain and enhance their well-being. However, the beneficial effects of online social support on IS employees' psychological strain and well-being have been ignored. Drawing upon transactional model of stress and coping, this study propose a research model to examine the direct, indirect and buffering effects of online social support on IS employees' strain. This study will empirically test the model with data collected from part-time MBA students specializing in IS at six universities located in northern, central and southern Taiwan.

Keyword: Coping Strategies, Online Social Support, Strain, Technostress, Techno-Insecurity.

1. Introduction

Information and communication technology (ICT) and its systems have become an increasingly important part of the modern organizations. The use of ICTs has not only improved productivity efficiencies and effectiveness but also help the organizations gain competitive advantages [1, 2]. The implementation of ICTs leads to effects that have a "dual nature" [2]. In particular, along with generating obvious business benefits, the advancement of ICTs can also cause negative reactions in IS employees or professional and require them to adjust in various ways [2], e.g., continuous learning of new ICTs.

As ICT is changing rapidly, it has caused many information systems (IS) employees or professionals to suffer from technostress. The term technostress was coined in 1984 by clinical psychologist Craig Brod. He described it as a modern disease of adaptation caused by the inability to cope or deal with ICTs in a healthy manner. Technostress among IS employees is long recognized as a key factor affecting IS productivity and turnover and leading to substantial associated costs. Ayyagari et al. [1] identified techno-insecurity as a

stressor and found that pace of ICTs change is a one of predictors of job insecurity (techno-insecurity), which in turn leads to strain.

According to transactional model of stress and coping [3], social support and coping strategies have positive influences on mental health. Social support may have a direct beneficial effect on mental health outcomes, regardless of the level of stress a person is experiencing [4]. Social support may indirectly decrease individuals' strain through coping strategies. Moreover, social support may also have a buffering or moderating effect on the relationship between stressor and strain. Organizational behavior literature suggests that workplace social support (e.g., organizational, supervisor and coworker supports) have beneficial effects on employees' psychological strain and well-being [5]. Social networking sites or virtual communities have become popular sources for social support. However, little attention has been paid to the relationships between online social support, coping strategies, IS employees' techno- insecurity, and strain.

Broadly, the purpose of this study is to link online social support and transactional model of stress and coping in the technostress context in order to explore whether online social support can mitigate IS employees' strain. Specifically, the research questions of interest to this study are:

Does online social support have a direct effect on IS employees' strain?

Does online social support have an indirect effect on IS employees' strain through strategies?

Does online social support have a buffering (moderating) effect on the relationship between techno-insecurity and IS employees' strain?

2. Literature Review

2.1 Technostress

Technostress is a problem of adaptation wherein individuals are unable to cope with requirements related to their use of ICT [2]. Stress is a condition or feeling experienced when a person perceives that "demands exceed the personal and social resources the individual is able to mobilize" [6]. Stress was considered to be a transactional phenomenon dependent on the meaning of the stimulus to the perceiver [6]. Stressors or stress stimuli are demands made by the internal or external environment that upset balance, thus affecting physical and psychological well-being and requiring action to restore balance [7]. Strain is an individual's psychological response to the stressors.

Stressors associated with technostress are called technostress creators [2]. Tarafdar et al. [8] identified five technostress creators, including techno-overload (users face information overload and ICT-enabled multitasking), techno-invasion (users never feel free of ICTs), techno-complexity (users find it intimidating to learn and use ICTs), techno-insecurity (users feel insecure about their jobs in the face of new ICTs and others who might know more about these technologies), and techno-uncertainty (users feel unsettled by continual upgrades and

accompanying software and hardware changes). In this study, we focus on the impact of techno-insecurity on IS employees' strain.

2.2 Social Support

There is no universally accepted definition of social support. Social support can be broadly defined as any process through which social relationships might promote health and well-being [9]. Social support groups have the characteristics of small groups and social supporters, and are formed by individuals with similar situations. In a social support group, members share their experience, information and emotional support with each other. Social support has been identified as an important buffer of mental health [4]. Furthermore, it is one of the most well-documented psychological factors influencing physical health outcomes.

With the growth and accessibility of the Internet, online support groups, social network sites, or virtual communities have become viable alternatives to face-to-face support groups. There are online support groups providing help and support for a great variety of problems and conditions. Because of its inherent anonymity, online social support is a more welcome venue for people who have stigmatizing disorders, like HIV/AIDS or breast cancer or are recovering from sexual abuse, to discuss sensitive issues. For example, Evan et al. [10] examined the perceived value and types of social supports that characterize the discussions of women who participate in postpartum depression online discussion groups. However, though prior studies have focused on physical and mental health, it is not yet known if online social support will mitigate IS employees' strain resulting from rapid change of ICTs.

2.3 Transactional Model of Stress and Coping

According to transactional model of stress and coping [3], social support, personal coping resources, and coping strategies have positive influences on mental health. Three models concerning possible relationships between social support, stressor, coping resources, coping strategies, and strain have been proposed: direct effect, indirect effect, and buffering effect.

The direct or main effect model hypothesizes that social support has a *direct beneficial effect* on physical and mental health outcomes [4]. The *indirect effect model* postulates that social support may indirectly decrease individuals' strain through personal coping resources or strategies. Lazarus and Folkman [3] have defined coping as "constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands appraised as taxing or exceeding the resources of the person" (p. 1108).

Social support may have a *buffering or moderating effect* on the relationship between stressor and strain. Social support intervenes between the stressor and the stress response (strain) to reduce its effect. The stress-buffering effect hypothesis suggests that social supports positively influence health and well-being by protecting people from the pathogenic effects of stressful events [4].

Coping strategies refer to the specific efforts, both behavioral and psychological, that people employ to master, tolerate, reduce, or minimize stressful events. Lazarus and Folkman

[3] distinguished between two coping strategies: problem-focused coping and emotion-focused coping. Problem-focused coping involves purposefully confronting sources of stress, including attempts to actively solve the problem or alter the situation. Emotion-focused coping involves attempts to reduce or manage distress by distancing oneself from stressors, such as avoidance.

3. Research Model

Drawing upon transactional model of stress and coping [3], we propose a technostress model to study and explain the influence of online social support on IS employees' strain. As shown in Figure 1, our model predicts that mitigation of strain is driven mainly by three effects. First, the direct effect theorizes that online social support directly decrease strain. Second, the indirect effect theorizes that online social support indirectly influence strain through coping strategies. Third, the buffering effect theorizes that online social support moderates the relationship between techno-insecurity and strain.

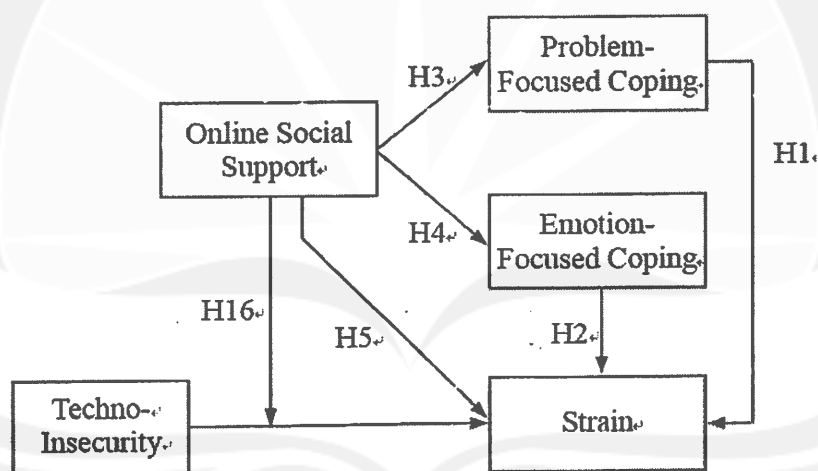
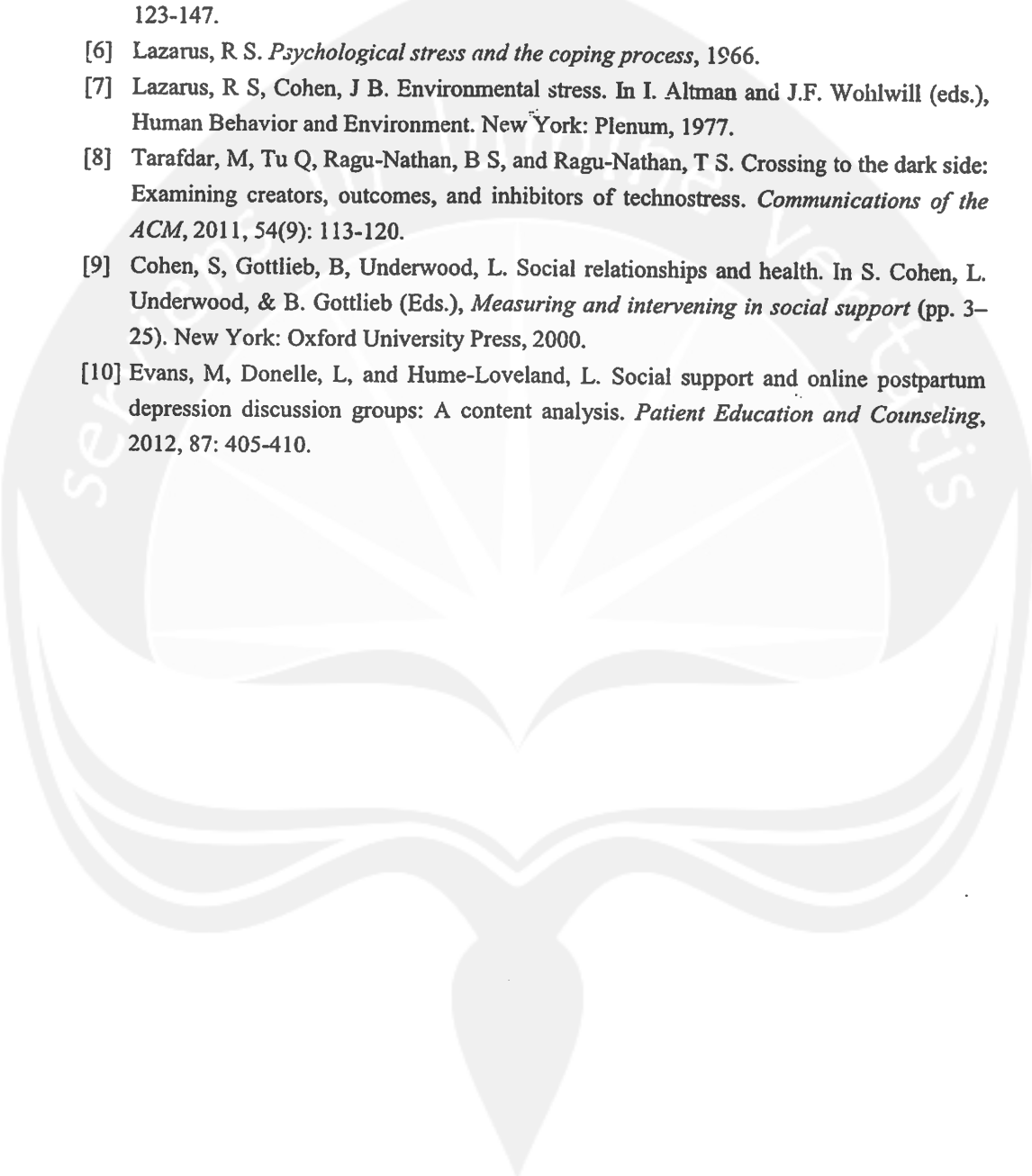


Figure 1. Research Model

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BREFM-22428
Meta-Analysis for Industrial Security Research Trends

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Abstract

Domestic and international research analysis studied already should be proceeded for settling industrial security domestically. In this research, We will research about industry security comparing domestic and international definition of industrial security. Referring the international definition of industrial security, We would like to suggest the direction of industrial security. We will do a meta-analysis as designing classification system and dividing an area of research in detail for searching the domestic and international trend of research. We will search the trend of research into analysis model which consists of paper number by area, paper number by year and keyword by year. We will use net-miner program for analysis of keyword which is social network analysis program. We will look at the research direction of future domestic industrial security through keyword analysis of domestic and international industrial security.

Keyword: Industrial Security, Meta-Analysis, Social Science Security

Acknowledgement

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BREFM-22449

Research and Application of Fast Image Decomposition Algorithm Base on Morphological Component Analysis and SSIM

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Abstract

The purpose of Morphological component analysis algorithm is to do the decomposition of the image in order to fetch the different characteristics, which contain different morphological characteristics, include Texture, piecewise smooth (cartoon) polymorphic component. Before MCA algorithm proposed, the research of image decomposition mainly include "Image Decomposition Based on Variational PDE " and " Image Decomposition Based on Sparse Representation", because the MCA algorithm combines the advantage of the above two image component decomposition algorithms, it provides a good processing mechanism for Super resolution and Image inpainting the two image processing problems.

This research a novel combination algorithm of different kernel function with the strength and toughness of the concept of the p-norm base on SSIM and PSO, although traditional decomposition method can achieve a good decomposition effect, but there still exist the computational efficiency problem in the old algorithm, although the original algorithm reached good edge retention effect, but the amount of computation is relatively large

Keyword: Morphological Component Analysis, MCA, Super resolution, Image inpainting, SSIM, PSO, p-norm

Poster Session 9

Education 3

B1, Renaissance Sapporo Hotel

2015/07/22 Wednesday 13:30-14:30

ISBSS-4684

**Diverse Imagination of Art Intervening Community - A Discourse on Artistic
Realization of Higher Education**

Tun-Ju Liao | *National Formosa University*

ISBSS-4410

A Structural Relationship among Grit, Personality, and School Maladjustment

Hyesuk Ha | *Korea National Open University*

Mae Hyang Hwang | *Gyeongin National University of Education*

Hyo Jin Lim | *Chonbuk National University*

THEORY OF LAMINATE COMPOSITES

1. Introduction
2. Basic Concepts
3. Stress-Strain Relations

The theory of laminate composites is a branch of mechanics that deals with the behavior of structures made of two or more layers of material bonded together. These layers, or laminae, are typically made of different materials, such as carbon fiber, Kevlar, or fiberglass, which are stacked and bonded to form a laminate. The theory aims to predict the mechanical properties of the laminate, such as its strength, stiffness, and thermal expansion, based on the properties of the individual laminae and the way they are stacked and bonded.

The basic concepts of laminate theory include the definition of the laminate's geometry, the properties of the individual laminae, and the way they are stacked and bonded. The laminate is typically modeled as a stack of layers, each with a specific thickness and material properties. The properties of the laminate as a whole are determined by the properties of the individual laminae and the way they are stacked and bonded.

The stress-strain relations for laminate composites are derived from the basic concepts. The stress in each lamina is related to the strain in that lamina by a constitutive equation. The strain in each lamina is related to the overall strain of the laminate by a compatibility condition. The overall stress of the laminate is then determined by the stresses in the individual laminae.

ISBSS-4684

**Diverse Imagination of Art Intervening Community - A Discourse on
Artistic Realization of Higher Education**

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Abstract

The core of thought for college education reformation of recent years is to provide what type of learning for students to acquire necessary knowledge and ability in this practical world. Scholar B. E. Suchman indicated the thinking activities of human daily lives generated from culture, which was situational and knowledge had to be interpreted in derivative and applied situations for significance. Moreover, the issues of art and public domain are getting more and more concern nowadays in Taiwan. Nevertheless, concepts like openness of art, cultural and creative industry and citizenship aesthetics all focus on artistic learning and perception, which is a comprehension for living. The researcher deems specialty development is more emphasized and artistic and human cultivation is mostly limited to a general knowledge course in higher education. Therefore, in the researcher's opinion, how to internalize college students' power for artistic realization in the present higher art education is something to be considered.

Accordingly, a group of aspiring art volunteers and teachers that love their communities formed a Dandelion Family in this research with a view to developing the spirit of college minor revolution by entering communities through artistic activities to create more issues like land, community industry and green ecology, etc. for concern. As a result, the objectives of this research are: (1) to summarize practical steps specifically by analyzing the process of college students intervening communities via art; and (2) to develop feasible projects of art intervening communities through spontaneity of college students. The strategies of action learning and case study were applied in this research. The domain for study was the Chuehtou Community nearby the school and the duration of study was about half a year. The results of the research are: (1) five practical steps for art intervening communities via innovative realization of higher education consist of the woodpecker diagnosis stage – to discover and analyze problems, the bee division of labor stage – to make up an action learning team, the lion king leadership stage – to introduce promoters, the buffalo rumination stage – to reflect, the otter engineer stage – to put into action and the owl meditation stage – to diagnose the learning process; and (2) four feasible projects of art intervening communities via innovative realization of higher education include Exploring the land – to create a micro-trip,

Discovering happiness – to create a micro-experience, Action of opening the treasure box – to create a micro-touch and Sharing with people – to create a micro-forum.

Key words: College minor revolution, Higher art education, Art intervening communities, Artistic realization

1. Introduction

Art has to go out without being limited to the role of a space for an art museum. For openness of art, every kind of people should be allowed to choose themes or present exhibitions and displays. Meanwhile, more concerns for social issues and disadvantaged minorities (old people, women, teenagers) need to be focused. It is expected the elitist art can be overthrown and the yuppie theory of taste promoted by art can be stopped. Instead, people should truly touch with art and art should be more emphasized on the relationship between land and people. Moreover, art should be incorporated to events, objects, forms, models, space, places and people to constitute themes for mutual dialogues and connection. The core of thinking on college education reformation for recent years is what type of learning students need to obtain necessary knowledge and ability in this real world (Ministry of Education, 2006). Scholar B. E. Suchman indicated the thinking activities of human daily lives generated from culture, which was situational (quoted from Mayer, 1992). Knowledge had to be interpreted in derivative and applied situations for significance (Brown, Collins & Duguid, 1989). S. Papert (1996) also deemed though memories and practice were the basic ways of applying knowledge, emphasis on problem solving capabilities in contexts was the foundation of getting new knowledge for life learning. Consequently, living contexts need to be focused for learning and the problems in the real world should be started with to interweave an interactive learning scenario with life. In this way, knowledge can be internalized to become a mobile ability.

Few scholars present systematic studies on general art education in higher education. Fang-cheng Wu (1996) indicated in his study on general art education in college that the general art course in colleges was mostly limited to appreciation. Shiu-chu Hsu and Shiu-wen Huang (2004) considered students expected to acquire the capacities of operation and creation from the general art course, which were followed by the abilities of appreciation, criticism and art application. Yung-shien Chen (2005) also thought lots of hands-on teaching materials in the art education curriculum not only motivated students to learn through practice or skill training, but also rendered to the effect of learning by analogy. It's not hard to discover from the researches of the aforementioned scholars that since art appreciation is mainly focused in national general art education, creation-oriented contents need to be more emphasized instead (Fang-cheng Wu, 1996, Shiu-chu Hsu and Shiu-wen Huang, 2004, Yung-shien Chen, 2005). Nevertheless, both creation and appreciation are very important

core abilities in art education. As P. Duncum (1999) said, a great quantity of rich and fast changing visual messages in our daily life had already dominated the ways we looked at things. Therefore, we should never ignore the visual art experiences and their power. Art educators need to study visual culture art in daily life and stress prompt participation of aesthetics of living. As for higher art education, the researcher is not only concerned about the contents of creation or appreciation, but how art educators apply what type of activities and strategies to help college students to internalize art learning and become performers of cultural art (Tun-ju Liao, 2009).

Accordingly, a group of aspiring art volunteers and teachers that love their communities formed a Dandelion Family in this research with a view to developing the spirit of college minor revolution by entering communities through artistic activities. In other words, art may be just a medium or method in our revolution and what we expect is more issues like love for the land, community industry and green ecology, etc. can be fully presented through art. It is hoped students and people of the community have an in-depth understanding of the living space and environment around them via artistic activities. The strategies of action learning and case study were applied in this research. The domain for preliminary study was the Chuehtou Community nearby the school and the duration of study was about half a year. The objectives of this research are:

- 2.1 To summarize practical steps specifically by analyzing the process of college students intervening communities via art; and**
- 2.2 To develop feasible projects of art intervening communities through spontaneity of college students.**

2. Core issues of artistic realization

2.1 Community care

A community is a basic unit of human life. The influence and intervention of modernization not only change the original lifestyle but also reduce the traditional cultural tone. Consequently, our team wishes to enter the community and the field to create more subjects via the concept of root searching and art activities so that the outsiders may know the beauty and charisma of the land.

2.2 Declined industries

Every local community has its own rich agricultural resources such as coffee, peanuts, pickles, pineapples and a variety of flowers and so on. Almost each village has a characteristic specialty and the green industry is everywhere. Every farm produce becomes a representative image of each town. As a result, we hope to guide people to rediscover the value of their community industry and to think about all possibilities of adding values to their local industry.

2.3 Green environment

We hope to convey the ideas of environmental education and land protection via thematic activities like lectures on fun of nature, the green fingers workshop, ecological investigations and green life maps so that more people may become concerned about the environment, land, history and culture of their homeland. We not only spread artistic seeds, but also disseminate the concept of green ecology and eco-lifestyle through motivating parents and their children in the community and miscellaneous workshops.

2.4 Action aesthetics

In terms of the action plan for community aesthetics, the historical idea of memories was applied to help people of the community to find out and tell their own stories, express their love for the land and develop their identity with the local culture via artistic creation.

3. Artistic realization – methods and steps

3.1 Cohesion of a common view: to form an art team

(1) Team introduction

“Art Dandelion – to the power of N” is the name of the team. It is expected the spirit and power of this team are like the little seeds of a dandelion that are blown about in the wind and bloom everywhere. To the power of N is a mathematical term that means to time itself several times. For instance, two to the power of three is eight, i.e. two times two for three times ($2 \times 2 \times 2 = 8$). It implies the multiplier and infinite power, which also stands for the spirit of the team.

(2) Team interaction

This team is a cross-domain and interdisciplinary organization with students from diverse backgrounds and teachers of extremely different specialties. College students play a major role in this project and teachers merely act as a go-between and motivator. Hence, the core idea of dealing with all questions is based on 5W1H for resolution and disposition.

A. Why – why to do it? Reasons and causes.

B. How – how to do it? Division of labor and carrying out.

C. What – what are the core value and concept to do it?

D. Which – what are the strategies and methods?

F.E. When – what time?

G. Where – what place?

3.2 Design of art activities: let art go into community

(1) Exploring the land – to create a micro-trip

Shooting of micro-films, making of green maps and setting up of community picture books are included. It is expected communities can be marketed in creative ways from the

perspective of college students and a rush for taking a trip to the countryside for backpackers and the young generation can be created.

(2) Discovering happiness – to create a micro-experience

Training of community art reporters on static design and dynamic picture shooting is included. We hope college students can look for the stories and memories belonging to the community exclusively and make them into touching art reports.

(3) Action of opening the treasure box – to create a micro-touch

This action constitutes “people-oriented extension – setting up sense of community / an explanation meeting on consensus of community residents,” “object-oriented extension – ecology workshops obtaining material from local sources,” and “landscape-oriented extension – art creation workshops of specific art actions.” The team makes the community residents cohere through various workshops and digs out the possibility of regenerating the industry.

(4) Sharing with people – to create a micro-forum

Setting up an FB platform and publishing an e-paper are included. The team expects to create enthusiastic discussions and film downloading via this information platform.

3.3 Planning of implementation steps: to make art intervention more strategic

Action learning will be applied to the specific execution steps of this project. R. Revans (1980) indicated action learning developed questioning insights in a group according to the existing things in the real world and he proposed the formula of $L = P + Q$ as a model for action learning (quoted from the translation of Hung-cheng Huang & Yung-kai Liao, 2003). L represents learning; P refers to programmed knowledge that may come from experts or books for problem solving and Q stands for questioning to search for helpful resolutions and make action plans for complex problem solving. However, there are plenty of reflections involved in the process of action learning and the learners need to amend their own thinking continuously during the process (quoted from the translation of Yung-lung Huang & Shu Chia, 2001). A reflection means to look back, think about and explore the core of the question during a periodic cycle. As a result, K. Weinstein (1995) changed this model into $L = P + Q + A + R$ (quoted from the translation of Yung-lung Huang & Shu Chia, 2001), in which A means action; i.e. to put knowledge and thoughts into action and R refers to reflection; i.e. learners review the performance of the implemented project. Six execution steps of this project are summarized as follows and each step will be served as a reference of reflection in the future.

(1) The woodpecker diagnosis stage – to discover and analyze problems

Action learning focuses on a certain problem, project, challenge, issue or task and the problem has to be significant and urgent. Thus, the Dandelion Family walked into, investigated and discovered communities and analyzed their problems.

(2) The bee division of labor stage – to make up an action learning team

The core of action learning is the action learning team, which is usually composed of four to eight people from different backgrounds. It helps the team to look at the problems from different angles and provide creative viewpoints for the best solutions. Therefore, the Dandelion Family has teachers and students from different departments and specialties for brainstorming.

(3) The lion king leadership stage – to introduce promoters

There is a promoter in an action learning team, whose major tasks are to ensure the operation of the team and help the members in learning. Hence, the leader of the Dandelion Family is a student who leads other art-loving college students and acts as a critically important revolutionary leader of the team.

(4) The buffalo rumination stage – to reflect

Reflection is very important for learners because it helps people to be aware of the things about and around them. Reflection is also a very important learning process for the team members during action. Consequently, the Dandelion Family holds irregular meetings to discuss the defects or effects of actions for improvement.

(5) The otter engineer stage – to put into action

The members of the action learning team need to be active. If the team doesn't act and reflect, there will be no true learning. The Dandelion Family emphasizes the interactions with the cultural and historical people and investigations of the literature and art resources of the communities. Practical actions are required and reflections are added during action for a better understanding of the community culture.

(6) The owl meditation stage – to diagnose the learning process

Action learning is based on a complete learning cycle. In other words, inquiry, reflection, planning, action and second reflection are included in the learning process to review self learning experiences. At least ten times of interactive discussions among the family members are planned, which is a type of reflection as well as a process of reviewing self learning.

4.Realization performance of community art

4.1 Introduction of Chuehtou Community

Chuehtou is a typical rural village that mainly grows peanuts, garlic and rice. Plenty of local residents are engaged in towel processing for the past few years. The major group in the community is people from southern Fukien Province. Chuehtou Community is characterized with Kutingben, a large round barn with a diameter of ten meters and a height of about ten meters. Square windows or doors were available to store grain. It is shaped like a conical straw hat and becomes a feature of the community. There are 298 households and 969 people at the moment; however, as young people are moving out, the aged become more. Since

community development is greatly promoted in villages recently, the team hopes to help community members to do their parts and develop their community cohesiveness.

4.2 Practical implementation

A detailed explanation of practical implementation is limited to the space as data are huge. You may check “Art Dandelion – to the power of N” at FB for details. A brief summary is as follows:

(1) Exploring the land – to create a micro-trip

A. Making of bike maps

Maps were made for tourists to appreciate the community by riding bikes. Refer to Fig. 1.



Fig. 1: Design of Guide Map

B. Shooting of micro-films

The domain is based on the community for people to discover the beauty of it. Characteristics of the community were incorporated into script design so that the viewers may experience the peculiar village scenery and the stories through films. Refer to Table 1.

Table 1: Parts of Community Micro-films

<p>Kutingben of Chuehtou Community incorporated into the script</p>	<p>Community industry incorporated into the script – Cultural Museum of Towels</p>

(2) Discovering happiness – to create a micro-experience

The community residents may understand more about the things around them through the workshops. The community was practically investigated and the plant industry as well as the plants of the community were made known via the handmade soap workshop. The local residents not only truly know about their hometown, but also apply a great amount of

cinnamons to develop organic handmade soaps. See Table 3. Table 3: Pictures of Handmade Soap Workshop

<p>Parents and their children experienced making of handmade soaps together at night.</p>	<p>Teachers of National Formosa University taught the residents how to make handmade soaps.</p>

(3) Action of opening the treasure box – to create a micro-touch

A. Art weekly

Several art reporters were assigned to explore stories of the community on a weekly basis, wrote down special events and presented them with words and pictures. See Table 4.


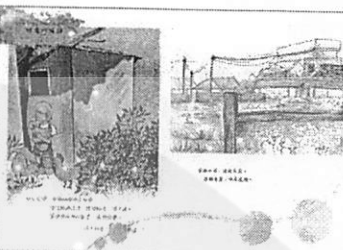
Table 4: Layouts of Art Weekly

<p>Students interviewed and reported industrial stories of the community.</p>	<p>Students excavated stories of famous spots in the community.</p>

B. Picture books of Chuehtou Community

Students presented the beautiful scenery and stories of the community with picture books through interactions with the local residents and every page has its own story. See Table 5.


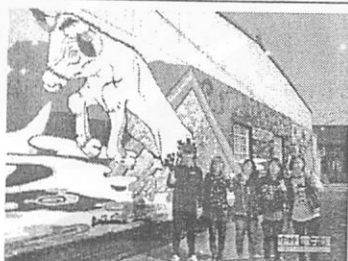
Table 5: Layouts of Community Picture Books

	
<p>Kutingben, the feature of the community, was served as the background of the picture book.</p>	<p>Viewers were guided to understand the community with initiation of stories.</p>

C. Community wall painting

Students and the local residents were drawn together through the activity of painting walls. A highlight of the community was established by creating large wall paintings. See Table 6.

Table 6: Pictures of Large Community Wall Paintings

	
<p>Waste Kutingbens were turned into a scenic spot of the community.</p>	<p>Six large wall paintings created a highlight for the community.</p>

(4) Sharing with people – to create a micro-forum

A. Establishment of an FB Group

A web page of "Art Dandelion – to the power of N" was established to share the findings of the art reporters on a weekly basis. The true color of each individual was also recorded by films. Dribs and drabs of the community are shared with the fans. The local residents may also see their accomplishments through the agitations of the college students.

B. After-school visits of art volunteers

Diversified artistic visits to the communities were also planned by the team with a view to creating a space for dialogues via inspections and emulations. Successful operation of other communities may be understood so as to know how to apply creativity to run his/her own community.

4.3 Implementation achievements

(1) Community practice: to experience localized community aesthetics of living

The team helped the community to develop an artistic outlook of cultural features through the interdisciplinary capabilities. Thanks to this cross-domain and interdisciplinary organization, each student and teacher has his/her own specialty background and brainstorming on a specific issue renders to a different or creative action model easily. Therefore, the art plan based on the issues of community, industry and ecology is a complete idea, including an identification and understanding of culture, history, resources and the ecological system with plenty of critical thoughts involved. We believe teamwork and the creative initiation of the students may bring a brand new outlook and opportunity to the passing and declining industry. In this way, the artistic landscape of the local town can be created and the attitude and capabilities towards the local life will be activated.

(2) Team growth: to develop awareness of action/citizenship aesthetics for students

The development model for realizing the dream step by step can increase the power of the creative team. Our team was active in planning a proper route for cultural exploration and promoting cultural aesthetic experiences of excellent quality in a practical way. Students' aesthetic consciousness may be awakened through latent cultural nurture and internalized to become a civil responsibility by perceiving the external environment. We hope the creative capabilities of the team are divergent and the diverging effect of each individual in the team may help more people to know the operation model and ideas of the team. The existing artistic and cultural resources and human landscapes are connected through practical actions so that students may put themselves into cultural grounding tasks and citizenship aesthetics can truly become a movement that all people are concerned about and happy to participate.

(3) Students' growth: to become doers and performers of social and human concerns

Action learning step by step may develop the ability of an action research for participant students. The role played by students of this project is extremely important and the teachers only act as a promoter and a guide. The teachers spread the core spirit and knowledge learning through activities and the students are in the front-line for practicing. As a result, there might have some problems and difficulties that need to be overcome during the process and the confronting challenges in particular are the problems of this real world that can't be learned outside class. Students have to experience and try from the sequential realization process to learn how to solve problems and convert their abilities efficiently. As the procedures of action learning were applied by the team, students would acquire experiential and problem solving learning and face the real problems of a community, instead of virtual statuses in books. It is a specific learning experience that can only get from peer discussion and action. Consequently, the team expects every participant student can develop his/her research ability for action learning, which will be another revolutionary spirit for them to look at this world and lead the society.

5. Conclusions

5.1 Conclusions

- (1) Five practical steps for art intervening communities via innovative realization of higher education consist of the woodpecker diagnosis stage – to discover and analyze problems, the bee division of labor stage – to make up an action learning team, the lion king leadership stage – to introduce promoters, the buffalo rumination stage – to reflect, the otter engineer stage – to put into action and the owl meditation stage – to diagnose the learning process.**

The specific implementation steps for artistic realization in this project utilize the strategy of action learning to make artistic realization more theoretical. Six steps are divided during the process and they are named by the attributes of the animals so that students may have an in-depth understanding of the feature of each step. These steps include: learners are arranged to solve a real problem; team members discuss and analyze problems; team members collect and share relevant information; team members produce possible solutions; team members present problem reports and learning evaluations and reflections. A brief summary is described as follows:

- A. The woodpecker diagnosis stage – to discover and analyze problems: the Dandelion Family walked into, investigated and discovered communities and analyzed their problems.
- B. The bee division of labor stage – to make up an action learning team: the Dandelion Family has teachers and students from different departments and specialties for brainstorming.
- C. The lion king leadership stage – to introduce promoters: the leader of the Dandelion Family is the captain of art and culture volunteers, who acts as a critically important revolutionary leader of the team.
- D. The buffalo rumination stage – to reflect: the Dandelion Family holds irregular meetings to discuss the defects or effects of actions for improvement.
- E. The otter engineer stage – to put into action: the Dandelion Family emphasizes the interactions with the cultural and historical people of the communities and reflections on actions result in a better understanding of the community culture.
- F. The owl meditation stage – to diagnose the learning process: several times of interactive discussions among the family members are planned to review the self learning process.

- (2) Four feasible projects of art intervening communities via innovative realization of higher education include Exploring the land – to create a micro-trip, Discovering happiness – to create a micro-experience, Action of opening the treasure box – to create a micro-touch and Sharing with people – to create a micro-forum.**

The activity we promote is called EDAS, which means exploring, discovering, action and sharing. These four words represent four stages, four meanings and four processes. The team

will design and plan package activities for each process to put the idea of each stage into practice. The team has accomplished one micro-film, one documentary film, eight weekly art videos (uploaded to YUTO), one volume of 54 weekly art reports with words and pictures (edited to an e-book), 16 weekly art paintings, one community picture book and one guide map, etc. Each of these four stages has its own specific activities, which are summarized as the following:

A. Exploring the land – to create a micro-trip: students go into the community to lead the local people to investigate the characteristics of the community and these investigations include people, culture, landscape, scenery and industry to create a rush for taking a trip to the countryside for backpackers and the young generation.

B. Discovering happiness – to create a micro-experience: workshops are held for students and local people to learn the stories of discovering happiness, ecology, industry, touch and culture.

C. Action of opening the treasure box – to create a micro-touch: artistic practice includes “people-oriented extension – setting up sense of community / an explanation meeting on consensus of community residents,” “object-oriented extension – approach of obtaining material from local sources / green finger ecology workshops,” and “landscape-oriented extension – specific art actions.” The team makes the community residents cohere through various activities and digs out the possibility of regenerating the industry.

D. Sharing with people – to create a micro-forum: setting up an FB platform and publishing an e-paper (collaborating with now news) are included. The team expects to create enthusiastic discussions and film downloading via this network platform. The major task of sharing with people is to motivate concerns and discussions from young people through creating topics.

5.2 Suggestions

(1) Higher education should stress human exploration and allow college students to experience the community and create aesthetics of living.

Aesthetic economy has become a global trend nowadays and aesthetic elements are strikingly used to create visual images and perceptions either in local or community industries or even articles of daily lives. We are in a time of cultural consumption and aesthetic experience. For university students that are closely correlated to industrial development and employment environment, the purpose of art learning is to cultivate them to become practitioners of living art. Practice is designed in this project to represent the common memories of the community in the manners of cultural preservation, environmental restoration, community green fingers and artistic activation so that college students can voice and act out their concerns and shaping of a living space. Systematic planning, recording, reflecting and re-amending in activities can truly develop students' perception and action towards environmental art.

(2) Higher art education should stress group concerns and propose possibilities of innovating declining community industries.

The 21st century is a knowledge-based economic epoch and those that master knowledge can own wealth and competitiveness. Nevertheless, acquisition of knowledge depends on accumulation, proliferation, brainstorming, application and correction. In other words, continuous studying, learning and accumulating experiences are required for knowledge. Action learning is exactly a learning method that emphasizes experiences, which helps students' reflection and integration abilities on knowledge. It is believed that community culture based creative activities and the strategy of action learning develop a brand new model for higher education. In addition to specialty knowledge, college students walk out of school, learn to care about the community, understand the place they live and discover various possibilities of innovating the declining communities.

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A Structural Relationship among Grit, Personality, and School Maladjustment

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Abstract

This article presents a structural relationship among grit, personality and school adjustment among Open University students in South Korea. We analyzed 535 college students' responses and the results showed that two grit factors negatively predicted school maladjustment. Among the Big Five personality factors, only neuroticism and conscientiousness significantly predicted grit factors; students who were higher in neuroticism tended to have low grit scores while students who were higher in conscientiousness were more likely to have higher grit scores.

Keywords: Grit, Personality, Big5, School Adjustment

1. Introduction

Defined as perseverance and passion for long-term goals (Duckworth et al., 2007), grit has been noted as one of the important factors to explain academic success in many fields of education. The concept of grit has been expanded as it has a disposition or trait associated with perseverance of effort and tenacity (Schechtman et al., 2013). Many researchers agreed that grit is a significant indicator to predict future success because it helps to pursue one's goal in spite of barriers (Duckworth, Peterson, Matthews, & Kelly, 2007; Duckworth & Quinn, 2009; Duckworth et al., 2011). For example, grittier cadets were less likely to drop out even after difficult summer training in a highly competitive military academy. Duckworth and her colleagues also reported that adults with higher level of grit were more likely to attain

higher level of education and made fewer changes in their career paths (Duckworth et al., 2007).

1.1 Grit, Personality, and School Adjustment

Previous research suggests that grit was correlated with personality factors such as conscientiousness in Big Five (Duckworth et al., 2007). Grit seems to have many similarities in terms of the characteristics of conscientiousness; conscientious people tend to “thorough, careful, reliable, organized, and self-controlled” (Duckworth et al., 2007, p. 1089). Grit, however, differs from the trait of conscientiousness because the former pertains to the long-term effort rather than short-term attention. Like Duckworth and her colleagues (2007) explained, “the gritty individuals not only finish tasks at hand but pursue a given aim over years” (p. 1089).

Among the predictors related to academic achievement, it has been noted that IQ, personality, and motivation (e.g. self-efficacy, attribution, and goal orientation) play major roles in explaining success in school (Kellogg & Whiteford, 2009). High level of conscientiousness and low level of neuroticism were found to be significantly associated with higher achievement, notwithstanding that these traits were not able to guarantee the excellence in school (Ericsson & Ward, 2007). Rather, these two personality traits seem to partially mediate between intrinsic motivation and academic achievement (Komarraju, Karau, & Schmeck, 2009). Given the prior research, we hypothesized that grit would be predicted by personality variables, while it would be negatively related to the failure or maladjustment in school among college students.

1.2 Current Study

We first tested a 10-factor measurement model among grit, personality (i.e. neuroticism, extroversion, openness to experiences, agreeableness, and conscientiousness) and three areas of school maladjustment (i.e. academic, emotional, and career-related problems) using Confirmatory Factor Analysis (CFA). We then tested a structural model to examine whether different personality traits could significantly predict two grit factors (i.e. perseverance of effort and consistency of interest), which in turn, were associated with three kinds of maladjustment of college students.

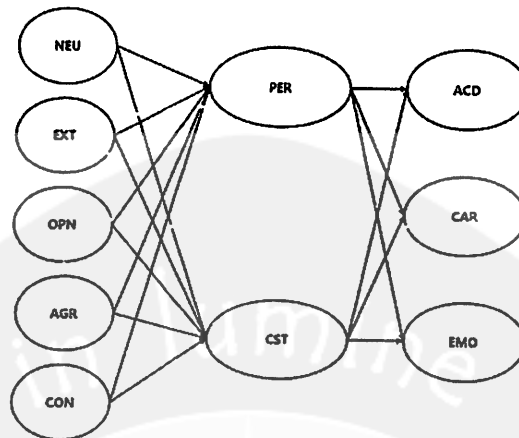


Fig. 5: A research model of the present study

Note: Covariance and error terms of measurement model are not presented for clarity; NEU-Neuroticism, EXT-Extroversion, OPN-Openness, AGR-Agreeableness, CON-Conscientiousness, PER-Perseverance, CST-Consistency, ACD-Academic maladjustment, CAR-Career-related maladjustment, EMO-Emotional maladjustment.

2. Methods

2.1 Participants

A total of 535 college students attending in an Open University in South Korea were participated. Mean age of the subjects was 37.21 (SD=4.55). Mostly there were female students (95.1%) and there were 38.7% of sophomore, 31.2% of junior, and 27.7% of senior students.

2.2 Measures

Three kinds of measures were utilized in the present study. First, *grit* was assessed based on the translated and validated version of short-form of the Grit Scale developed by Duckworth et al. (2009). Grit consists of perseverance of effort (e.g. "I have achieved a goal that took years of work") and consistency of interest (e.g. "I have difficulty maintaining my focus on projects that take more than a few months to complete"). Perseverance and consistency had six items each and reliability coefficients (Cronbach's α 's) were .69 and .67, respectively.

Second, *The IPIP (International Personality Item Pool Big Five)* (Goldberg, 1992) consists of neuroticism (or emotional stability, e.g. "I get stressed out easily"), extroversion (e.g. "I feel comfortable around people"), openness (or intellect/imagination, e.g. "I have excellent ideas"), agreeableness (e.g. "I'm not interested in other people's problems), and conscientiousness (e.g. "I follow a schedule"). The Cronbach's α 's were .75~.88. Finally, *school maladjustment* was developed by Lee, Hwang, and Kwon (2008) and measured by 30 items of academic (e.g. "I have difficulties in finishing class assignments), emotional (e.g. "I

don't see any hope in my future"), and career-related problems (e.g. "It is difficult for me to decide what to do for my career") (α 's = .87~.86). Three measures had response options ranged from 1(*not very much like me*) to 5(*very much like me*).

2.3 Analysis

After preliminary analyses for descriptive statistics and correlations among variables of interest, we employed CFA to examine a 10-factor measurement model. Then we analyzed our hypothesized model using a Structural Equation Modeling (SEM). In the matter of the variables of interest the items were divided into parcels according to the sequence of factor loadings within the same factor. Each parcel was used as a measured variable to reflect the latent variable. The reason for conducting item parceling is because measurement error could be overestimated and the fit may be poor if there are too many items to measure one factor in a structural equation model analysis. Item parceling is a method to decrease the number of measurement items by using the sum or mean of the item group composed of several individual items. This method is used when there are many measurement items or when the sample is not big. It is possible with the premise that the grouped items have unidimensionality (Bagozzi & Edward, 1998).

3. Results

We first performed CFA to investigate the factor structure, using maximum likelihood estimation procedures. We used the Tucker–Lewis index (TLI), the comparative fit index (CFI), the root-mean-square error of approximation (RMSEA), and the chi-square statistics for evaluating model fit. We included all observed and latent variables in this step of the analyses to ensure adequate specification of the measurement model before testing structural relationships among the latent variables. The fit indices of 10-factor measurement model were marginally acceptable; $\chi^2 = 1,037.57(df=305, p < .001)$, TLI = .872, CFI = .897, RMSEA = .067 and all the loadings were higher than .30. Table 1 shows the factor correlations among variables of interest. Specifically, areas of maladjustment were positively correlated among others (ϕ 's = .47 to .57, $p < .001$). The two grit factors (perseverance of effort and consistency of interest) were positively correlated with each other ($\phi = .41, p < .001$). Neuroticism were negatively correlated with other four personality (ϕ 's = -.21 to -.39, $p < .001$), while other personality factors (i.e. conscientiousness, extroversion, openness and agreeableness) were positively correlated among others (ϕ 's = .26 to .49, $p < .001$).

Table 1: Correlations among Latent Variables

Career	↔Academic	0.474***	0.049	0.000
Emotional	↔Academic	0.565***	0.050	0.000
	↔Career	0.570***	0.052	0.000
Conscientiousness	↔Neuroticism	-0.238***	0.053	0.000
Extroversion	↔Neuroticism	-0.390***	0.043	0.000
	↔Conscientiousness	0.259***	0.052	0.000
Openness	↔Neuroticism	-0.266***	0.049	0.000
	↔Conscientiousness	0.352***	0.051	0.000
	↔Extroversion	0.487***	0.042	0.000
Agreeableness	↔Neuroticism	-0.210***	0.051	0.000
	↔Conscientiousness	0.541***	0.046	0.000
	↔Extroversion	0.483***	0.043	0.000
	↔Openness	0.445***	0.045	0.000
Consistency	↔Perseverance	0.414***	0.088	0.000

Note: Academic-Academic maladjustment, Career-Career-related maladjustment, Emotional-Emotional maladjustment, *** $p < .001$.

Then we investigated a structural model among grit, personality, and school maladjustment. Modification indexes pointed to significant covariation among several error terms. Among many potentially significant parameters, we just freed one error covariance. This path had indicators that were adjacent on the survey (EM1 and EM2). The fit indices of SEM displayed an acceptable fit; $\chi^2 = 1,165.36(df=319, p < .001)$, TLI = .881, CFI = .859, RMSEA = .070. Specifically, two grit factors negatively predicted school maladjustment in terms of career-related and emotional problems (γ 's = -.20 to -.58). For academic area, only perseverance negatively predicted maladjustment ($\gamma = -.40$). That means students with higher grit level tended to have fewer problems in school with academic, emotional and career-related issues. Generally, the effects of perseverance of effort were higher than those of consistency of interests.

Only neuroticism ($\gamma = -.23$ for perseverance, $\gamma = -.41$ for consistency) and conscientiousness ($\gamma = .66$ for perseverance, $\gamma = .28$ for consistency) significantly predicted grit factors; students who were higher in neuroticism were more likely to have lower grit scores while students who were higher in conscientiousness were more likely to have higher grit scores. In terms of the relative predictability of personality factors, conscientiousness seems to have higher association with grit than neuroticism does. Table 2 presents standardized coefficients in the research model.

Table 2: Standardized coefficients in the hypothesized model

		<i>beta</i>	<i>se</i>	<i>p</i>
Academic	←Perseverance	-0.403***	0.057	0.000
Maladjustment	←Consistency	-0.107	0.057	0.109
Career-related	←Perseverance	-0.575***	0.050	0.000
Maladjustment	←Consistency	-0.146***	0.052	0.000
Emotional	←Perseverance	-0.377***	0.068	0.000
Maladjustment	←Consistency	-0.194**	0.062	0.001
Perseverance of Effort	←Neuroticism	-0.231***	0.060	0.000
	←Conscientiousness	0.662***	0.066	0.000
	←Extroversion	0.051	0.064	0.291
	←Openness	0.108	0.060	0.074
	←Agreeableness	-0.046	0.076	0.532
Consistency of Interest	←Neuroticism	-0.413***	0.057	0.000
	←Conscientiousness	0.278***	0.070	0.000
	←Extroversion	-0.068	0.068	0.448
	←Openness	0.005	0.065	0.991
	←Agreeableness	-0.135	0.077	0.081

** $p < .01$, *** $p < .001$

4. Discussion

The results of our model revealed that grittier students are less likely to have problems in school. First, students who reported higher levels of perseverance of effort and consistency of interest were more likely to function well in college. Duckworth et al. (2007) once noted that adults who had higher educational aspiration achieved higher scores in grit scale than adults who had lower aspiration. It partially explains our results that especially in the Open University, it is important for students to possess persistence and effort to learn to earn a degree. Moreover, pursuing long-term goals (such as getting a bachelor's degree) in spite of difficulties seems especially crucial for adult students in Open universities because often there may be other issues (e.g. work-family balance) than studying itself. As Duckworth and her colleagues posited, gritty college students outperformed their less gritty peers in cumulative GPA. We further found a relative predictability of grit factors; in other words, perseverance of effort is more important than consistency of interest at least for academic adjustment (see Table 2).

Second, the results of relationships between grit and personality support other evidence (Duckworth et al., 2007; Lee & Shon, 2013). Lee and Shon once reported some significant correlations among Big Five personality and grit; correlation between neuroticism and grit was negative ($r = -.46$) while the one between conscientiousness and grit was moderately

positive ($r = .52$) among college students. Our results demonstrated that especially these two personality factors had significant but different predictability in explaining two aspects of grit (i.e. perseverance and consistency). While the directionality of the relationships among neuroticism, conscientiousness, and grit factors was similar to that of Lee and Shon (2013)'s, the magnitude of correlation demonstrated different patterns. On one hand, the negative relation between neuroticism and perseverance was lower than the one between neuroticism and consistency. On the other hand, the positive relation between conscientiousness and perseverance was much higher than the one between conscientiousness and consistency. Based on the results, we concluded that there was a differential effect of personality on the similar but distinct aspects of grit trait, depending on the degree to which they are associated with perseverance and consistency.

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Poster Session 10

Business 2 / Management 4

B1, Renaissance Sapporo Hotel

2015/07/22 Wednesday 15:00-16:00

BREFM-22434

The Relationship between the Internationalization Process of Taiwanese SMEs and Business Networks

Wei-Long Lee | *National Kaohsiung University of Applied Sciences*

Yi-Ping Tang | *National Kaohsiung University of Applied Sciences*

ISBSS-4318

A Case Study on the Behavior Model of E-Shopping for Sport Production

Kuo-Chin Lin | *National Tsing Hua University*

Chih-Fu Cheng | *National Taiwan Normal University*

ISBSS-4464

The Impact of Stress Coping and OMAK on Well-Being

Yu, Shih Cheng | *National Yun-Lin University of Science and Technology*

ISBSS-4427

The Application of Experiential Marketing to Professional Sports: The Case Study of Lamigo Monkeys Baseball Team

Tsung-Ta Hsieh | *National Taiwan Normal University*

Chih-Fu Cheng | *National Taiwan Normal University*

ISBSS-4384

Habitual Exercise Development of Taiwan Elderly

En-Szu Lin | *National Taiwan Normal University*

Jui-Fu Chen | *National Taiwan Normal University*

BREFM-22434

The Relationship between the Internationalization Process of Taiwanese SMEs and Business Networks

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Abstract

Business networks play decisive roles in the internationalization of small and medium-sized enterprises (SMEs). Studies have noted that networks are able to enhance enterprises' organizational performance. Moreover, networks can reduce environmental uncertainty. Enterprises normally obtain more resources through networks [1]. In terms of theory, this study mainly draws on the theoretical background of the Business Network Internationalization Process Model [2]. This model emphasizes that networks form a company's environment, and network members establish their trustworthiness and commitments through learning and accumulating experience and knowledge. This study covers the process of internationalization of Taiwanese business investments in China, adapting a longitudinal research approach to understand how Taiwanese businessmen develop and penetrate the Chinese market over time. This study also analyzes how enterprises acquire network resources over different periods (past, present, and future) and the impact on their commitment decisions.

This study's results show that Taiwanese businessmen's investments in China have occurred in three stages: (a) Past: Due to a lack of resources, experience, and knowledge in the early stages, enterprises chose a country at a closer psychological distance in which to build a foundation and enter another market. (b) Present: Obtaining multiple partnership effects through cooperative partners and creating unlimited opportunities through the expansion of network connections. (c) Future: Faced with future environmental changes, the majority of Taiwanese businessmen choose to either remain in China or enter Southeast Asian countries.

Keyword: Internationalization, SMEs, Business Network, New Uppsala Model

Introduction

With Chinese economic reform, Taiwanese businessmen gradually started to invest and establish factories in China. However, China has imposed many financial policies in recent years, increasing prime costs. Consequently, some Taiwanese businesses relocated factories to Southeast Asian countries where labor is cheaper. Some businesses even returned to Taiwan. With the changing environmental situation, how will Taiwanese businessmen vary in their location selection? Will they choose to leave or stay in China? Will they relocate to Southeast Asia? Will they return to Taiwan?

Internationalization has become a trend in enterprise operation and development. Whether concrete or abstract, internationalization grants enterprises resources and benefits, such as more space in which to develop than remaining within their own countries. In pursuit of sustainable development that benefits the company, enterprises from around the world have actively expanded to foreign markets. With respect to the risks of internationalization, enterprises are unfamiliar with the international market during the early stages of investment, and owing to the variations in the foreign market, enterprises normally develop sequentially by gradually investing more resources and expanding the scale of investment. This phenomenon conforms to the so-called Uppsala Model advanced by [3]. They emphasize that the internationalization of enterprises is a sequential process, and the process of internationalization parallels the company's level of obtaining and integrating related knowledge of the host country market and gradually increases the degree of investment in a specific market.

Subsequent studies have demonstrated that networks benefit the internationalization of enterprises (e.g., [4]). [5]Axelsson and Johanson (1992) noted that enterprises should not only probe into the selection of models when investing in international markets but also take the foreign markets' network that they have established into consideration. Axelsson and Johanson also believe that the Uppsala Model should include the learning process in a certain market in the model hypothesis to analyze a business's network internationalization. Therefore, [2]Johanson and Vahlne (2009) amended the original Uppsala Model and named the new model the Business Network Internationalization Process Model, which included the additional concept of the business network.

Literature Review

1. The general situation of Taiwanese SME investment in China

According to the statistics provided by the Bureau of Foreign Trade of the Ministry of Economic Affairs, Taiwanese foreign trade turnover in 2013 was approximately 575.3 billion USD. Trade turnover with China, Taiwan's major trading partner, amounted to 124.3 billion USD, which ranked first at 21.618%. In fact, the massive trade volume between Taiwan and China is mainly due to Taiwanese business investment in China. According to the data from the Investment Commission of the Ministry of Economic Affairs, there were 440 approved documents for investing in China in 2013. These approved documents represent a decrease of 3.08% from 2012. Taiwanese businessmen invested 8,684,904,000 USD in 2013, which decreased by 20.50% compared to 2012. This pattern suggests that Taiwanese business investment in China is in negative growth.

2. The relationship between the Internationalization Process Model and the network

With the continuously changing international environment and with various opinions proposed by scholars, Johanson and Vahlne believe that it is necessary to clearly identify the importance of networks in the internationalization of enterprises. Therefore, the original model from 1977 was amended in 2009, and the new model's core concept is the business network, which explores the development of the relationship between enterprise internationalization and network members. The new model hence replaced the old model, which considered psychological distance a factor in entering foreign markets [2].

Johanson and Vahlne's amended Uppsala Model was named the Business Network Internationalization Process Model. This model's basic hypotheses concern uncertainty and limitations and, therefore, are separated into two changing mechanisms, which are the "state aspect" and "change aspect." It explains that a company's level of involvement in a foreign market is determined by a series of causes and effects, and an enterprises' dynamic process of internationalization is explained by the mutual influence of both state and change aspects.

The New Uppsala Model emphasizes that the network forms a company's environment, and network members establish mutual trustworthiness and commitment by accumulating experience and knowledge. Furthermore, internationalization can strengthen an enterprise's status in the network, which then helps the enterprise discover and create opportunities in the international market.

3. The Impact of enterprise networking on the Internationalization of Small and Medium-sized Enterprises

With globalization, a growing number of SMEs are gradually investing in the international market [6]. Normally, it is more difficult for SMEs to enter international markets compared

with large enterprises [7], mainly because SMEs face more limited resources, including financial, time, management, and market knowledge resources [8]. Moreover, owing to the lack of administrative and international experience, managers are rather limited in skills and abilities in both domestic and foreign markets [9]. SMEs tend to have individual leadership, which is limited by the decision maker's personal characteristics and experiences [10]

[2]Johanson and Vahlne (2009) view insiders as an indispensable condition for internationalization in related networks. This research relies on the Business Network International Process Model, which provides the theoretical background to emphasize that a company's environment is formed by its network, and network members establish trustworthiness and commitments through learning and accumulating experience and knowledge. Therefore, this research will explore the resources that enterprises obtain through network members, and these resources will be elaborated and analyzed in terms of knowledge, opportunities, learning, and trustworthiness.

First, I would like to explore the impact that knowledge has on internationalization. In the study of the process of internationalization, it is emphasized that the accumulation of experience and the network are two major ways to obtain knowledge. Furthermore, market knowledge is the core of internationalization, that is, to understand the local business environment through "systemized market knowledge" and "network-specific knowledge." Systemized market knowledge is also known as "social knowledge," which includes foreign markets' language, culture, laws, and regulations [11]. Network-specific knowledge is obtained through partnerships, which consist of the members' various resources, needs, capabilities, strategies, and other types of relationships among the members; it is through the relationships and connections within the network that one creates new knowledge [2].

Second, the development of opportunities is similar to the processes of internationalization and of relationship development [12]. Based on the trustworthiness that the members of the partnership create, this relationship develops into a committed connection. This is also the intertwined process of knowledge development and commitment. The specialty of opportunity development is the gradual or continuous development of various types of knowledge. In other words, learning and commitment are inseparable, and both are used to discover and develop opportunities [2].

Third, internationalization is itself a learning process. One is able to learn from partnerships among various countries and from the negotiation and establishment of relationships [13]. During the process of internationalization, the result of knowledge is affected by learning experience. The preservation of experiential learning is a core element of an enterprise's

internationalization process, which implies that the development of knowledge is an accumulation process [2]. [14]Morgan and Hunt (1994) noted that trustworthiness is equal to reliable credibility, and this plays an important role in both relationship development and the business network. Trustworthiness is also crucial in successful learning and development of new knowledge. Trustworthiness can also replace knowledge. When an enterprise lacks necessary market knowledge, the enterprise can allow a trustworthy intermediary to operate foreign transactions [15]. Commitment and trustworthiness exist simultaneously. Commitment is developed through willing trustworthiness and positive intentions, so trustworthiness is a prerequisite condition for commitment [14].

Methods

According [16], case studies focus on a certain object of study during a specific period of time, and by analyzing the behavior of the case study, one is able to understand how and why it has developed to the present stage. Normally, it is through single cases or multiple cases that one structures and names a theory [17].

This is a study of the internationalization process of Taiwanese businessmen's investment in China, and it will be conducted by implementing both enterprise network and commitment decision perspectives. This study will divide four Taiwanese factories' investments in China into three stages – past, present, and future. The study will analyze the network resources that the enterprises obtained during the different stages, such as knowledge, opportunities, learning, and trustworthiness, and discuss the impact of these resources on the enterprises' commitment decision, including entry modes, organizational transitions, and selection of future locations.

Discussion

Taiwan's economy gradually matured during the 1990s. Many industries relocated owing to increases in salaries and the densification of labor forces. Under such circumstances, businessmen believed that their factories could not survive in Taiwan. Mainly concerned by prime costs and human resources, companies relocated to China, which is close to Taiwan. China also has the following advantages: It has a large market and a cheap labor force. There are no language or ethnic barriers between Taiwan and China.

Proposition 1. Taiwanese businessmen select China for investment because of close psychological distances, geographical advantages, and rich resources.

According to Taiwanese businessmen's backgrounds and the motives for entering China as mentioned above, the majority of Taiwanese SMEs moved to invest in China and establish

factories during the 1990s owing to industry trends and environmental pressure. They obtained many resources, including land, labor, water and electricity.

Proposition 2. The majority of Taiwanese businessmen directly invest in China by establishing factories, making use of resources such as land, labor, water and electricity. They also extend interpersonal relationships through other Taiwanese businessmen and gradually accumulate local suppliers and customers.

Taiwanese businessmen have thorough understandings of China's market and business environment. This helps Taiwanese businessmen enter the market and establish close network relationships. During the process of internationalization, it is easier for enterprises to understand the actual process by acquiring marketing knowledge than by extending marketing range. By obtaining marketing knowledge, enterprises are able to internationalize rapidly and then extend their marketing range. At the same time, enterprises are able to strengthen their competitive capabilities, which play an important role in developing countries [18].

Proposition 3. A thorough understanding of the local market helps enterprises enter the market and establish close network relationships.

Interrelationships among people in Chinese society are very important, and relationships are normally established with the help of other people. According to [19], *guanxi* (interrelationships) are a crucial trait of the Chinese culture. Numerous Chinese people can be connected to a society or within an enterprise's network, which is very influential in Chinese society. However, *guanxi* not only benefits transactions but also resource accumulation. These relationships stimulate mutual benefits and cooperation between enterprises (B2B) or between enterprises and governmental units (B2G).

Proposition 4. In the Chinese community, people establish relationships with the help of other people, build trustworthiness, and learn from one another. In this way, they are able to create and discover more opportunities to connect an enterprise to a society or an business network. Taiwanese businessmen have been investing in China for more than two decades. The market in China is changing continuously, including through amendments of laws and regulations. For instance, the government implements strict policies toward foreign investors, while locals face lenient regulations. Preferential investment schemes for foreigners were cancelled but investment restrictions for locals were relaxed. Local minimum wages have increased each year, and the government is paying more attention to environmental protection. These changes increase prime costs. Reacting to the changing market and environment, Taiwanese businessmen adjust their ways of entering China and their organizational scales. Changing a business' mode includes choices among the following: maintaining the status quo, reducing its scale, terminating the business, and expanding to Southeast Asian markets.

Proposition 5. China's changing market and environment affect enterprises' entry modes and organizational changes.

Amongst the interviewed enterprises, Companies A and B believe they are rather familiar with the industry and the market; therefore, it is unnecessary for them to make major changes to their modes of operating their businesses. Although China's law and regulations represent a considerable blow to Taiwanese businessmen, they still believe that developing the Chinese market holds great potential. They are willing to retain their enterprises' organizational scales to continue operating factories in China and to maintain amicable relationships with local partners.

Proposition 5.1. Local markets still have potential in developing. Enterprises' organizational scales retain the same modes as in the past.

The manufacturing industry's investing environment in China has changed in recent years, including land, labor, and environmental protection policies that lead to the gradual disappearance of the early producing conditions and associated advantages.

Summing up the interviewees' views, only companies A and B maintain their business scales. Other companies, such as company C, believe that it is necessary to undergo enterprise transformation; company D relocated to Vietnam. Over time, to react to environmental changes, Taiwanese businessmen adjust old operating modes and choose beneficial supplementary measures for their enterprises to maintain sustainable operations.

Proposition 5.2. The conditions and competitive advantages for manufacturing industries in China no longer exist. The entry modes transfer from manufacturing to trading once again.

Proposition 5.3. With the influence of unfavorable exterior factors, enterprises choose to expand to Southeast Asian markets and close factories in China.

Over the past twenty years, enterprises gradually expanded their network connections. With the resources from new partners and members, they were able to establish their own business networks. There are two important factors in the expansion of network connection. First, business transactions are able to negotiate mutual relationships. Cooperative relationships should preserve the principle of mutual preference and mutual benefits. Second, interpersonal interactions should develop the notion of synergy, that is, that "one plus one is greater than two." This means that through cooperative partners, an enterprise is able to multiply the effects of its partnerships. Whether through the expansion of interpersonal relationships or network relationships, the strength is infinite through the geometric multiplier of partners.

Proposition 6. The majority of Taiwanese businessmen continue to expand their network connections. Through cooperative partners, they multiply the effects of their partnerships and create limitless opportunities through their business networks.

Over the long term, most businessmen will not return to investing in Taiwan. The interviewees believe that the Taiwanese market is too small and there are few opportunities. Moreover, the government does not implement ideal industrial policies. For example, in human resources, there is a lack of both laborers and knowledge workers. These factors make the Taiwanese market disadvantageous. Therefore, the majority of the interviewed case studies choose to stay in China or expand to Southeast Asian countries. In spite of the uncertainty of Taiwanese businesses' locations in the future, enterprises are bound to expand their network relationships continuously.

Proposition 7. Owing to the transformation of the international economic situation, most Taiwanese businessmen choose to stay in China or to expand to Southeast Asian countries. Enterprises continue to expand their network relationships and use the enterprise networks that they have established in China to enter other markets.

Conclusion

With economic globalization, Taiwanese businessmen take the effect of industrial aggregation into consideration when investing in China. This helps enterprises enter new markets and establish close network relationships. Chinese society depends on people to help establish relationships. Although enterprises are singular individuals, they are able to create and discover more opportunities if they form a network with other trustworthy factories and if they learn from one another. This way, enterprises are able to connect to a society or to another enterprise network. Over more than two decades, enterprises gradually expanded their network connections. They obtained fresh resources through new members and partners and established their own business networks. Moreover, they have multiplied the effects of their partners and created limitless opportunities from their enterprise networks. Over the long term, the majority of Taiwanese businessmen will not return to Taiwan for investment. The interviewees all believe that Taiwan's market is too small and there are few opportunities for development. The government does not implement ideal industrial policies; moreover, the lack of human resources and knowledge workers make Taiwan a disadvantageous environment for investment. Therefore, most Taiwanese businessmen choose to stay in China or to expand to Southeast Asia.

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ISBSS-4318

A Case Study on the Behavior Model of E-Shopping for Sport Production

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Abstract

This research aimed to establish a model of e-shopping for sport production, basing on TPB to discuss how attitude, subjective norms, and perceived behavior control affect behavioral intention, and how behavioral intention affects transactions on the internet. Besides, discussing whether beliefs act as an adjustment between behavioral intention and purchasing behavior is also important. This research surveyed the consumers who have been buying sport production from internet by questionnaires, and analyzed the results with the aids of descriptive statistics, independent sample t-test, one-way ANOVA, and structural equation modeling. At last, we concluded the results with statistical analyses and discussions of relative papers as the following,

The main consumers of buying sport production on-line are young students who have the habits of exercising, therefore e-vendors could develop marketing strategies specifically for students.

For consumers who bought sport production from the internet have positive attitude and the ability of controlling their desire of purchasing through the net, additionally, the reference group also processes the ability of controlling above normal standard.

3. The amount of money consumers spent per year online would influence attitude, perceived behavior, and behavioral intention, while their vocations would affect attitude, subjective norms, perceived behavior, and behavioral intention.

4. The pattern of purchasing sport production online is accordance with the good-of-fit tests. Subjective norms and perceived behavior control is believed to influence the behavioral intention the most, besides, after behavioral intention forms, it would be adjusted by the beliefs toward online shopping websites and then finally decide how strong the purchasing actions would be.

Based on the conclusions mentioned above, this research suggested that e-vendors could make good use of marketing, and enhance the variety of production; For the newbies, they can try establishing an e-mart of sport production. The suggestions for future works are that to try adopting two-phase predictions for actual behavior and set up patterns specifically for

undergraduate students, therefore e-vendors could take the results as reliable reference and develop future marketing strategies.

Key words : sport production 、 e-shopping 、 TPB 、 moderator variable



ISBSS-4464

The Impact of Stress Coping and OMAK on Well-Being

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Abstract

Well-being is everyone's expectation. However, our life is filled varying stresses such as difficulties of work, interpersonal problem, society, economics, etc. Stress coping has been an important issue for people who living in the modern society. The purpose of this study is exploring the effects of varied coping strategies by leisure activities and OMAK. Observe Merits, Appreciate Kindness (OMAK) is a thinking process which consider things always positively. It was popular existing in the society of Confucian's culture. The effects of OMAK act as cognitive transferring when you encounter a challenge or depressive things. We sampled subjects from Yun-lin county, Taiwan. The instrument of assessing well-being is revised from Ryff's (1989) Scales of Psychological Well-being. The stress coping scale is revised from the concept of Iwasaki's (2000) Hierarchical dimensions of leisure stress coping as well as our edited OMAK scale. 919 participators are effective by whom including above 31 occupations. Subjects are male(60.4%) and female(39.6%), 51.1% are undergraduate, 89% are engaged in service related firms, the mean of age is 38.7(SD= 9.6). The results are as follow: there are 94.5% people's response with stress in daily life subjectively. While cumulating their stress events to form a criterion, only 42.1% are estimated with lower stress, nevertheless, 57.9% are higher stress objectively. The comprehension of stress through assessing oneself subjectively and computing life stress events objectively is different significantly($\chi^2 = 28.07$, $df = 4$, $P < .00$). The leisure stress coping (LSC) and OMAK have significant positive correlations with well-being. We distinguished participators into two clusters: Lower stress and Higher stress in which is depending on their objectively assessment of life stress events. We found both the LSC and OMAK dealing with coping strategies effectively in extent of stress being higher or not. More-OMAK group has significant different on well-being than those of Less-OMAK group while their objective stress criterion is high. In the lower stress cluster, there is not different on well-being between More- and Less- OMAK group. The present study suggests that LSC and OMAK has similar mechanism on stress coping. Especially, the leisure empowerment, social support, and OMAK are important variables in the future research.

Key words: Leisure Stress Coping, OMAK, Well-being, Cognitive Transferring

1. Introduction

Living in the modern world, people meet stress avoidlessly. The source of stress may be coming from every aspect of life such as competitions of work, violence, problem of families, environment, politics, etc. Nevertheless, seeking pleasure and avoiding pain is human's innate tendency. People know how to treat their unpleasurable situation and make themselves be happy. However, the different stress coping strategies will have varying effects. The most harsh event when befalling on people, as death of families, divorce, and lay off, will disrupt people's normal life even their health. Fortunately, these crises occur with lower probability. We face middle stress usually. How to manage our used stress effectively is the determination of daily life well-being.

H1 : The sense of objective stress is consist with the subjective appraisal for daily life stress. The more objective stress, the more subjective stress is.

Among various types of coping resources and strategies, leisure stress coping might be popular and convenient. Leisure can be an important means of helping people cope with stress and maintain their health. (Iwasaki & Mannell, 2000) proposed Hierarchical Dimensions of Leisure Stress Coping to explain how people release their stress with different ways. The dimensions proposed are based on a integrative review of social psychological research and leisure research on stress and coping. The first level includes two dimensions: leisure coping beliefs and leisure coping strategy. The second level of leisure beliefs includes two dimensions: leisure autonomy and leisure friendship. Under leisure autonomy there are third level variable: self-determination disposition and empowerment. The leisure friendship has four variables: emotional support, esteem support, tangible aid, informational support. In the first level, the other dimension leisure coping strategies has three second level variables: leisure companionship, leisure palliative coping, leisure mood enhancement.

The distinction between leisure beliefs and leisure coping strategies is useful for effectively predicting and explaining how leisure helps people coping with stress. People are more likely to display coping actions consistent with their personality or dispositions. One may choose taking a vacation to reduce stress or doing an aerobic exercise after office hour depends on the situational influence be weaker or stronger. No matter what style of leisure activity people do, leisure is an effective instrument for coping stress. The present study have an assumption as follow:

H2 : There is positive correlation between leisure coping stress and well-being significantly. The more people know how leisure coping stress is, the more well-being they are.

Although leisure stress coping helps people to be well-being, people still have stress while working on duty. Individual have to stop working then they would have leisure time to release stress. Employees must learn to pay patience to every encounter while clients

complained about products or service. Someone would serve their job as emotional labor because he/she endures clients' irrational requirement. Even the client is always correct, but employee is depressive at that moment. Thus, the leisure stress coping could not help at once. (Ellis, 1962) claimed that cognitive appraisal of an event determines the emotional response to it. The emotional responses to irrational cognitions can be changed if you are with more accurate and realistic appraisals of themselves and their experiences. In other words, problems were not what they could be. The emotion of problem solving depends on the extent of your thinking about them.

Observe merits and appreciate kindness (OMAK) is seen in the traditional Confucian culture rather than a new theory. In the collective based society, people would not tell the truth in which their friend had made not much a mistake. However, we should not forgive ourselves while making a little fault on the job. This situation makes us feel bad. The fault is seen as a stressor in our daily life and makes us unpleasurable. Watching at our faults seriously, we would misunderstand the fact if we could review it calmly.

OMAK is a cognitive behavior transferring method to release our stress. The events make one depressed will not make the others have the same feeling. (Lyddon, 1990) claimed that humans—as self-organizing, developing systems; that it does not emotional or create their personal and social realities. Event is neutral but explained towards fine or poor. OMAK changes our thinking positively about sources of stress. (Eliis, 1992) argued that people suffered from their obsessive disturbances. They consider things which happening above their expectation as a panic consequence. In other words, people construct irrationally from a reality and then scare it with destructive emotions. OMAK help people to see the grim realities of their environment are partly their own constructions, and while seeing the merits behind, they would change the emotions at once.

H3 : There is a significant correlation between OMAK and Well-being.

2. Method

The present study choose sixteen cities in Yun-Lin County, Taiwan. These cities have population above twenty thousand that distributed on Yun-Lin County widely. One hundred subjects were sampled randomly in these cities by researcher. One thousand three hundred and fifty questionnaires were posted or delivered by research assistants. The survey date were from October to December 2014.

The instrument was modified from literatures. Well-being scale was translated from The Ryff's Scale of Psychological Well-being(Ryff, 1989; Springer & Hauser, 2006). Ryff's Scale has six dimensions as Autonomy, Environment Mastery, Personal Growth, Positive Relations With Others, Purpose in Life, Self-Acceptance. The subjective stress was assessed for one item(Do you feel a lot of stress in your daily life?) the alternative is: always, sometime, not at all. The objective stress was assessed by 25 stressful events which

demonstrate different level of stress. The leisure stress coping scale was cited from Iwasaki's Hierarchical Dimensions of Leisure Stress Coping(Iwasaki, 2003; Iwasaki & Mannell, 2000). The OMAK scale was edited by researcher. The concept of OMAK is part of Bliss and Wisdom foundation's Organization Statements. A prior study found three main constructs for OMAK: 1. Observe merits positively(e.g. No matter what it's a benefit or disaster, I prefer observing the good side of event.), 2. Transfer faults into merits(e.g. I believe that bad situation would teach me something.) , 3. Appreciate kindness while falling into an adversity(e.g. Fall down on my way for my dream helps me be stronger.). The OMAK scale has 11 items and had been tested for a good expert validity and reliability. Cronbach's $\alpha = .71\sim.86$.

3. Result

919 participators are effective by whom including in more than 31 occupations. Subjects are male(60.4%) and female(39.6%), 51.1% are undergraduate, 89% are engaged in service related firms, the mean of age is 38.7(SD= 9.6).

Table 1 Comparison of Subjective stress and Objective stress level

Subjective stress	Lower level	Middle level	Higher level	sum
1.Always	120	155	78	353
2.Sometimes	224	201	66	491
3.Not at all	30	10	5	45
Total	374	366	149	889

Most people are stressful(94.5%), only 5.1% are without stress. There are 353 people (39.7%) always feeling stressful. Few persons feel not at all stressful subjectively. (45 persons, 5%). Compare persons who feel stressful subjectively to whom with objective stressor using Chi-square test method. It demonstrates that there are significant difference between subjective stress feeling and objective stress level ($\chi^2 = 28.07$, $df = 4$, $P < .00$).

The difference shows that people know how to release their stress. Moreover, researcher would like to know the different coping strategies as well as their efficiency. Comparing people who with high level stress and the frequency using OMAK(every time, usually, or seldom). The result as figure 1:

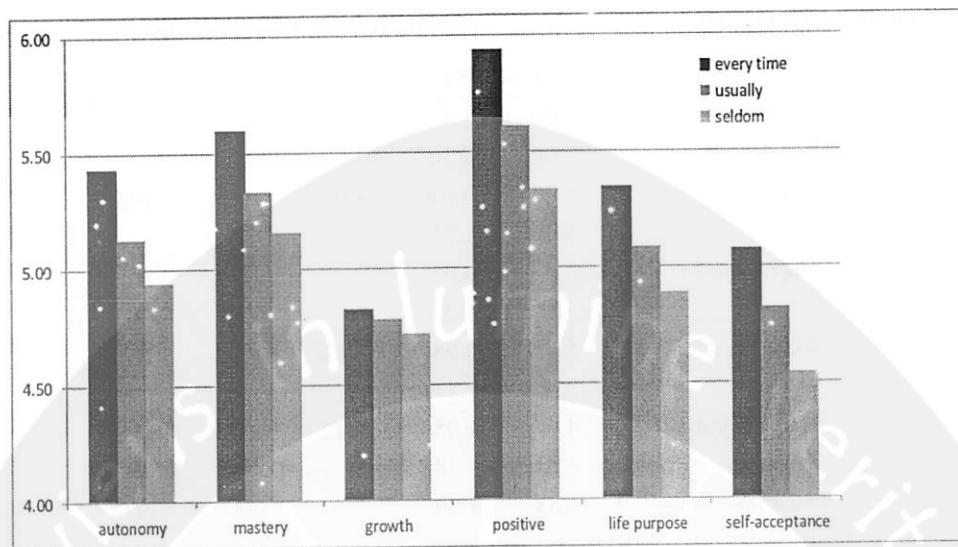


Figure 1 The effect of subjective OMAK on Well-being

Figure 1 illustrates that the more frequency people using OMAK strategy, the more well-being they are. Six dimensions of Ryff's well-being scale are significant difference for people using OMAK every time than those of seldom, except growth dimension. The hypotheses 3 was accepted and it meant OMAK contributing to well-being when one has stress objectively.

The objective stress level was measured by varying events which were given with weighted scores. The objective stress level divided into two groups: 1. Lower stress level group (27% of stress score, N=247), 2. Higher stress level group (73% of stress score, N=242). According to the sum of OMAK score, researcher divided subjects into two groups: 1. More-OMAK, 2. Less-OMAK. The comparisons is as table 2, table 3:

Table 2 Comparisons of t-test for OMAK on the samples with lower stress level

Variables		M	SD	t-Value	P	
Well-being	1.	30.89	3.77	1.71	.095	N.S.
	2.	29.42	5.20	"	"	"
Autonomy	1.	5.61	0.84	1.08	.285	N.S.
	2.	5.39	1.21	"	"	"
Empowerment	1.	5.51	0.93	0.72	.473	N.S.
	2.	5.39	1.20	"	"	"
Social Support	1.	5.09	0.98	0.23	.818	N.S.
	2.	5.05	1.23	"	"	"
Companionship	1.	4.77	1.05	-0.42	.672	N.S.
	2.	4.85	1.38	"	"	"
Palliative Coping	1.	4.85	1.00	-1.20	.231	N.S.
	2.	5.06	1.15	"	"	"
Mood enhancement	1.	5.71	0.78	-0.02	.988	N.S.
	2.	5.71	1.06	"	"	"

p.s : 1. More-OMAK, (N=203), 2. Less-OMAK, (N=40).

Table 3 Comparisons of t-test for OMAK on the samples with higher stress level

variables	M	SD	t-Value	P	
Well-being	29.90	3.97	3.76*	.00	1>2
1.					
2.	27.54	5.00			
Autonomy	5.27	0.96	2.26*	.026	1>2
1.					
2.	4.85	1.33			
Empowerment	5.40	0.94	3.26*	.002	1>2
1.					
2.	4.80	1.36			
Social Support	5.00	0.90	2.61*	.011	1>2
1.					
2.	4.56	1.23			
Companionship	4.67	1.06	1.86	.067	N.S
1.					
2.	4.30	1.44			
Palliative Coping	4.84	0.92	2.45*	.016	1>2
1.					
2.	4.42	1.22			
Mood enhancement 1.	5.59	0.80	2.65*	.01	1>2
2.	5.16	1.18			

p.s : 1. More-OMAK (N=174), 2. Less-OMAK (N=63).

The table 2 demonstrated that people with lower stress level were not significantly different from well-being, either do the six dimensions of Iwasaki's Leisure stress coping. However, as table 3 demonstrated, people with More-OMAK were significantly different from Less-OMAK on well-being ($t = 3.76$, $P < .00$), autonomy, empowerment, social support,

palliative coping, and mood enhancement($t = 2.45 \sim 3.26$, $P < .05$) when in the higher stress level situation.

4. Conclusion

Stressors exist everywhere. The same daily event may be one's stressor but not the other one's. Our response to the stress depends on our cognition, attitude, behavior. Thus, our efforts for coping stress is important. Stress coping influenced health. It's process acts on human mind and physiology as disease does. Iwasaki's Leisure Stress Coping works on the people living in the modern society. The evidence of this study proposed that objective stress level was different from stressful feeling subjectively. Nevertheless, the leisure stress coping types were adopted by a convenient way. If leisure activities promote to health as the effect of medicine, the OMAK should be the protection for stress coping.

The effects of OMAK stress coping works when one is in a serious situation. Oppositely, one is in a casual situation, OMAK may not help coping stress. People with the disposition of More-OMAK will be significant well-being than those with Less-OMAK. In addition, More-OMAK group is significant better in leisure stress coping such as autonomy, empowerment, social support, etc.

OMAK emphasizes cognitive transferring while coming up against a harsh situation. As (Ellis, 1992) said that people feel what they had explained. We depressed when we realized the event might constraint us. Observing merits always positively makes one have opportunities to break away from unwilling situation and seeking a chance to overcome it. The OMAK stress coping has a similar process as Leisure Belief. The mechanism of OMAK and Leisure Belief on well-being and stress coping is suggested in the future research.

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**The Application of Experiential Marketing to Professional Sports: The
Case Study of Lamigo Monkeys Baseball Team**

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Abstract

Experiential marketing exists everywhere and becomes a trend nowadays. It emphasizes atmosphere, perception, cultural creation, and participation. Especially, creating experience is one of the essences of leisure and sports industries. Under the tendency that experience and sports events have been converged together recently, this paper used experiential marketing as the foundation to discuss how experiential marketing is applied to professional sports. The study used literature reviewed method to collect former related scholar researches and analyze the case of Lamigo Monkeys baseball team in order to explore the experiential marketing of professional sport team. After generalizing these papers, we found that consumers focus more on the experiential value of products since they are in the generation which uses experience marketing as the mainstream. The Company stimulate consumers' sense and acquire identification of brand by experiential marketing. Since 2014, Lamigo has executed "All Monkeys Stadium" to operate locally. They set up a pure and healthy image through professional visual design and strengthened its experiential marketing by importing cheering dance and songs learned from Korea. By conducting this method, it successfully increases the sale of ticket substantially which can be set as a paradigm of other professional sports leagues. Therefore, if professional sports teams can receive feeling information of the consumers during the baseball game, and have their own stadium, concentrate on making the best use of resources effectively, establish an appropriate marketing tactic through professional design of software and hardware, and deepen their own culture and impression, they can build brand awareness and loyalty of their team brand to make great profit.

Keywords: experiential marketing, professional sports

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Habitual Exercise Development of Taiwan Elderly

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Abstract

Purpose: The main purpose of this research is to probe the impediments and incentives of habitual exercise development route of Taiwan elderly. **Objects:** 5 elderlys aged 65+ years, exercise three or more times a week. **Method:** Qualitative In-depth Interview Method is employed to collect data. Triangulation is used to test the validity and reliability. **Results:** 1. **Expection:** prevention of elderly metabolic disease; health maintainance and enhancement of cheerful life. 2. **Enjoyment:** medium of making friends, relief of life, do his/her utmost if he/she is bearable; one's health and safty, and others' dignity are not hindered because of abandoned play. 3. **Impediment:** exercise everyday except for hot weather. No particular exercise to take or specific goal to achieve. Craving satisfaction after exerciase dispels indolence.

Keywords: Taiwan, elderly, habit, exercise

1. Introduction

It is good for health to do exercise and pysical activities. There is no any exercise or physical activities is able to stop aging. According to some references, habitual exercise and physical activities can not only reduce the negative physiological effects but also reduce chronic illnessa diseases and disabilities. Elderly can be more healthy and longlived.

More and more researches prove that the elderlys' mental health and cognitive function can be enhenced by doing habitual exersice and physical activities. An ideal exercise prescription includes: aerobic exercise; muscle strengthening exercise; muscular endurance exercise and flexibility exercise. After doing habitual exercise, elderlys' muscle strength; muscular endurance; body balance and body harmonious are improved. Physical response ability is much better. In order to extend the healthy lifes of the elderly, this research probes the elderlys' motivations and hindrances of doing habitual exercise. The key factors of building up the habit of doing habitual exersice can be found.

3.3 What are the impediments of doing exercise?

3.3.1 I don't force myself to do what I cannot do. Sometime I have to take care of my grandkids, or to deal with any unexpected occurrence. Otherwise I keep doing exercise everyday.

3.3.2 I do exercise everyday. But I do not set any level or standard to reach for myself. Just enjoy it. I don't stop doing exercise unless I have something special to deal with.

3.3.3 When I am tired of doing exercise sometimes, I try to think the wonderful feeling after doing exercise and I dismiss my lazy idea and become more active.

3.3.4 I stop doing exercise for one reason: the weather is too hot to do exercise.

3.3.5 I seldom have to take care of my grandkids. In summer, I stop doing exercise in thundering or blazing hot days.

4. Conclusions and suggestions

4.1 Conclusions

Expection: The elderly know how to maintain their health by doing habitual exercise. Doing exercise is a good way to prevent metabolic disease. They can be more healthy for remaining lifetime. On the other hand, their lives can be more joyful by making friends who also enjoy doing exercise.

Enjoyment: Body, mind and spirit of the elderly can be improved by doing habitual exercise. They enjoy the feeling of sweating. Other leisure activities can make the elderly relax, but can not make them feel free from inhibitions. When the elderly focus on what they do, the process of nervous and relax is like a dialogue of physical and mental reaction. Doing exercise can also increase their metabolism and make them excited.

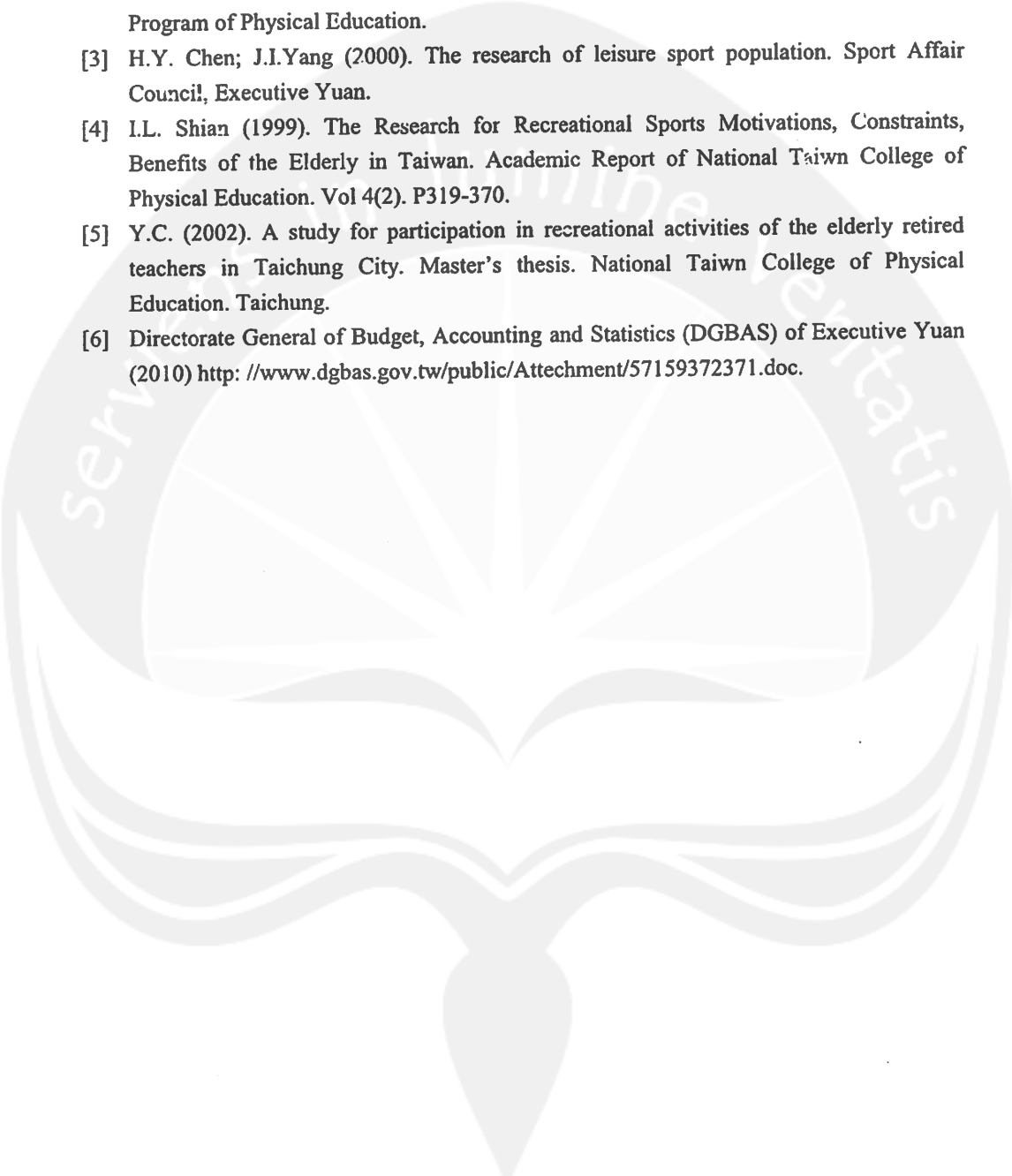
Impediments: The hot weather may be the only impediment. When they are tired of doing exercise sometimes, they think about the wonderful feeling after doing exercise and then lazy idea is dismissed. They don't stop doing exercise unless they have something special to do.

4.2 Suggestions

"To know is easy, but to do is difficult." This is the main reason for some people not doing exercise. It is a very critical strategy to promote motivation of doing habitual exercise by encouraging each other and making promises. The elderly who do regular exercise should be encouraged and rewarded. The elderly's health; enjoyment; making friends and self-existence value should win praises.

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